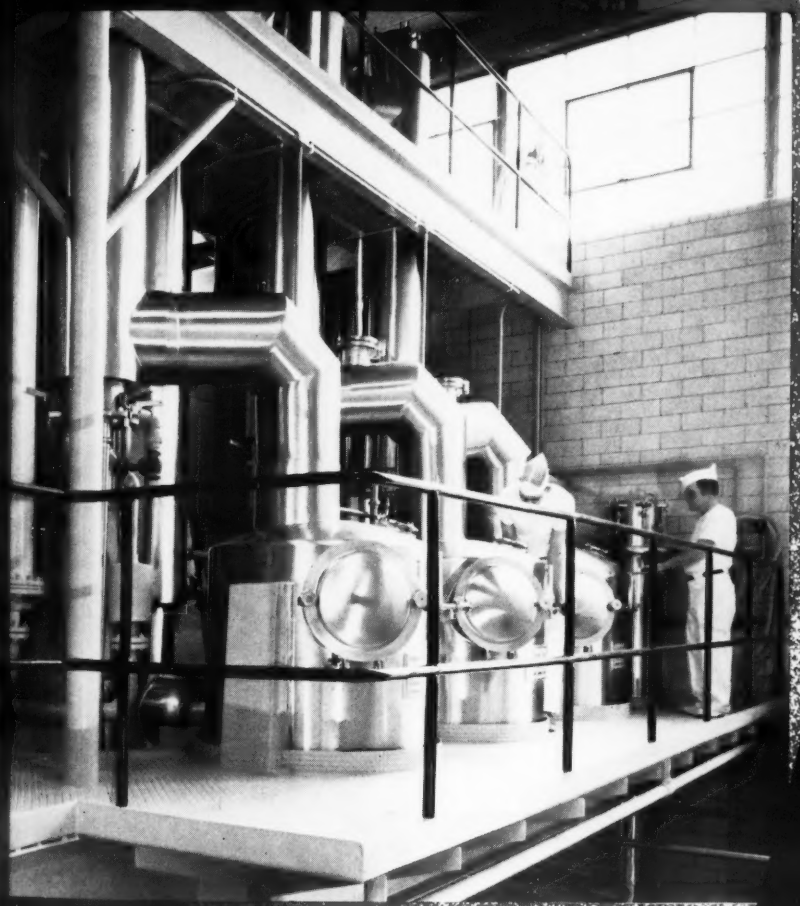
AUGUST 1961

FOOD PROCESSING

THE MAGAZINE OF APPLIED TECHNOLOGY
FOR MEN WHO MANAGE

Consumer Counsels—a case history showing alarming aspects of this new trend in government.....29



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Highly viscous products can now be processed;
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Steam economy—5 to 1 . . . . . page 34

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that's interesting

So there! . . . U.S.S.R.

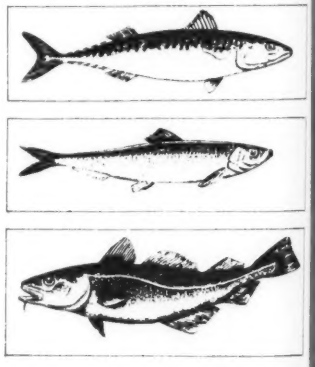
For whatever it proves in cold war prestige, food canning is one field of technology in which the Soviet Union lags from 20 to 30 yr behind the U.S., according to Milan D. Smith, 1960 president of National Canners Assn.

As examples, we produce 24 billion containers of canned foods annually vs. 4.3 billion, 1200 different canned food items vs. only 200 to 300, operate about 2200 canneries vs. approximately 200.

However, Smith warns against U.S. canners becoming "complacent," as the Soviets, by changing industrial emphasis, might just be apt to put their canning operations into orbit. Da, da!

Fastest fin in the sea . . .

. . . belongs to the mackerel (top), or to the sea trout and brown trout — all of whom slash along at up to 7 or 8 mph. Herring (center), haddock and whiting are next



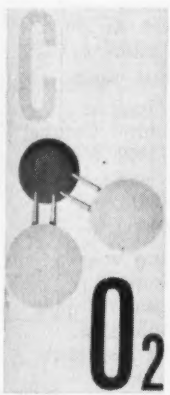
speediest, while the cod (lower) is strictly a "creep."

In fact, the cod not only is a piscatorial slow-poke, but it hasn't much endurance — about half that of the swift mackerel and only about one-eighth the endurance of the rugged herring. Latter can swim about 1100 body lengths before becoming exhausted and winding up as kippers.

that's interesting

Cool, man . . . cool!

Until the 20th century, man used carbon dioxide almost exclusively for making carbonated water. Yet, so profuse have been applications developed since 1900, that today the giant carbonated bev-



erage industry consumes only about 20 per cent of the CO_2 produced in the U.S.

One of the biggest applications was born in 1925, when Pure Carbonic Company became the first to sell solid carbon dioxide — "Dry Ice" — commercially, for use in refrigerating ice cream.

For more information on product at right, circle 7182 see information request blank opposite last page.

YOU CAN BET THIS BOX WILL BE ON TIME

Don't be too surprised if you see Hoerner boxes whisking across the countryside like this. Hoerner will go to almost any extreme if it will help meet a delivery date. This devotion to deadlines has given Hoerner an enviable reputation for dependable delivery. Just another reason why more and more manufacturers are coming to Hoerner for corrugated containers.

HOERNER BOXES, INC.

CORRUGATED PACKAGING SPECIALISTS FOR MID-AMERICA

GENERAL OFFICES: 600 Morgan Street, Keokuk, Iowa • MILL: Missoula, Montana • PLANTS: Fort Smith and Little Rock, Arkansas; Danville and Waukegan-Gurnee, Illinois; Des Moines, Keokuk and Ottumwa, Iowa; Minneapolis, Minnesota; Tupelo, Mississippi; Springfield, Missouri; Sand Springs, Oklahoma; Sioux Falls, South Dakota; Fort Worth and Mission, Texas • ASSOCIATE: Cajas y Empaques Impermeables, S.A., Mexico City D.F., Mexico

HYSTER

WHEN THE DRIVER PUTS HIS FOOT DOWN

An industrial truck operator's foot is a highly important part of his job. On a conventional truck, his right foot is busier than that of a pipe organ player, especially on tight maneuvering.

Hyster has perfected a control system that lets the driver move his truck forward or back, speed up or slow down, and the only control motion is a three-inch shift of his right toe!

He does it with a Hyster exclusive called "Monotrol." The physical evidence is a wide rubber pedal on the floorboard, and forward-reverse indicator lights on the dash. The proof of its value is on the balance sheet, in the form of money saved through more work, more safely performed, in less time.

If your company has a job for materials handling equipment, it will pay you to check on Hyster's Monotrol-equipped lift trucks. Your dealer has the proof that Hyster is the line that sets the engineering pace for all lift trucks.

INDUSTRIAL TRUCK DIVISION—Lift trucks, mobile cranes, straddle carriers
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over the editor's shoulder

Food politics

How will the trend toward politically appointed consumer counsels affect food processors? An eye-opening case history is examined in this issue.

California has had an Office of Consumer Counsel since October 1959, in charge of one woman, with four aides and three part-time workers.

Here's what the voice of 16,000,000 consumers called a proposal to apply statistical sampling to package weight inspection: a system "to legalize short-weighting." . . . "back-door pricing practices."

In our opinion, the measure benefits the consumer. Nevertheless, a cumulative negative impression forms in the minds of consumers by such attacks on our technical efforts to solve production, quality and food safety problems.

More and more, public education responsibilities are being thrust into the unwilling hands of technical staffs. Technologists are not trained for such work. But as a group of statistical quality control experts unexpectedly found out through political baptism by fire in California, it is time to learn.

Or else we lose public confidence by default.

Karl Rose
ASSOCIATE EDITOR

THE MAGAZINE OF APPLIED TECHNOLOGY
FOR MEN WHO MANAGE

AUGUST 1961
VOL. 22 NO. 8

FOOD PROCESSING

CIRCULATION OVER 39,000

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Designed for consumer protection, Offices of Consumer Counsel could become faddist strongholds. Actual case-history of what's happening now in California by Karl Robe, Associate Editor

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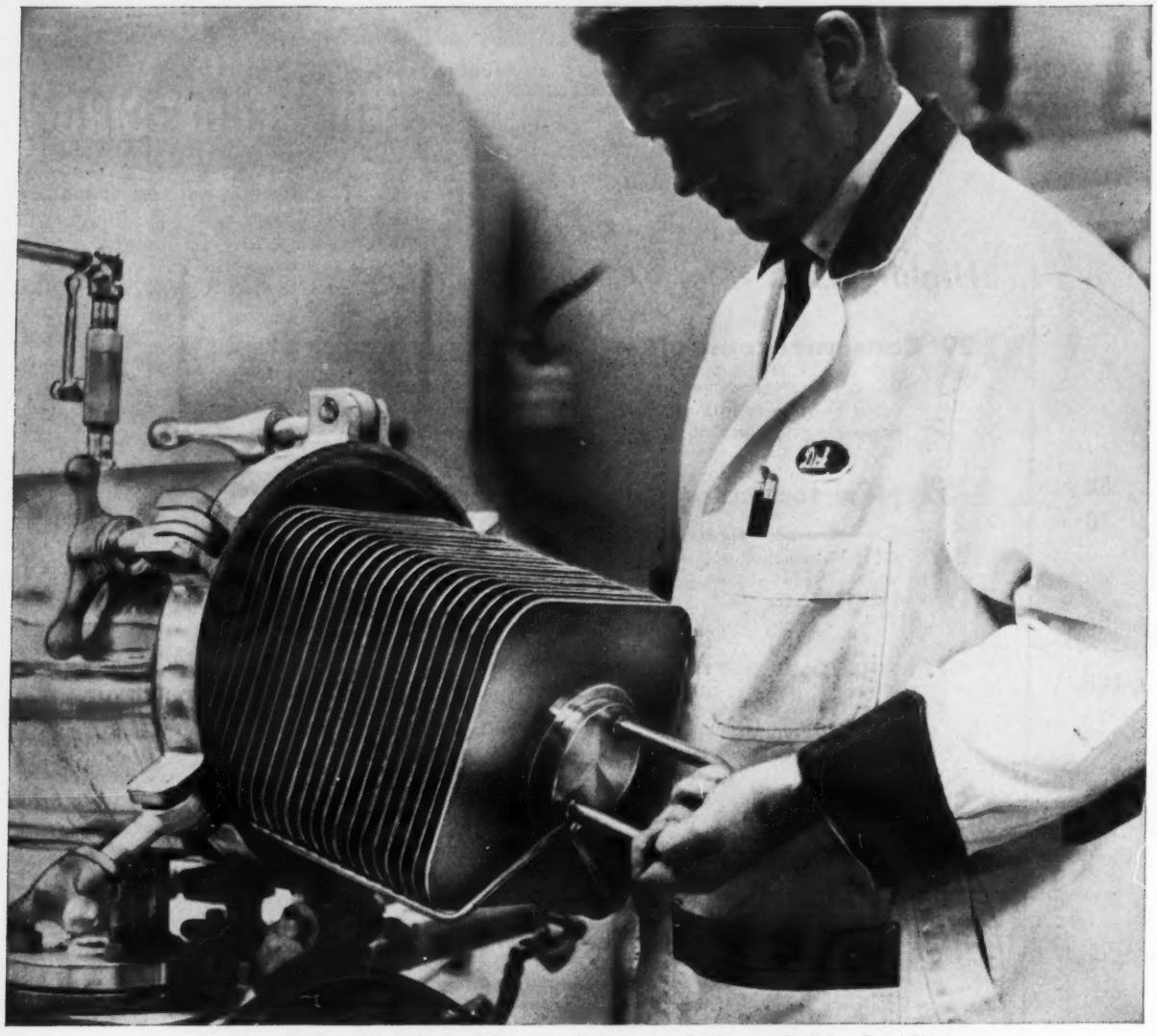

At Hiram Walker & Sons, Ltd., Walkerville, Ontario, this Surfamax* Stainless Steel filter "polishes" whiskey and gin by filtering out virtually all particles over 2 microns in size.

Whiskey gets a "polish" with a Nickel Stainless Steel Filter

At Hiram Walker & Sons, Ltd., Walkerville, Ontario, this unique filter removes tiny particles from whiskey flowing at the rate of 75 gallons per minute. The filter acts as a "polisher"—gives whiskey a final clarification before bottling.

Only a metal filter could take the powerful pressures created by this flow. But what kind of metal could be fabricated into thin, porous sheets that would remove the most minute particles? What kind of metal could withstand this rough treatment, and still retain its ease of cleaning?

The obvious answer was a Nickel Stainless Steel. This tough, durable metal assures absolute product purity—stays clean, bright and corrosion-resistant under the most rugged conditions. And Nickel Stainless Steel can be fabricated into easy-cleaning equipment . . . equipment with rounded corners, no cracks, no bacteria-forming spots.

The money-saving way to solve your process equipment problems is to specify Nickel Stainless Steels. Their properties enable them to stand up to practically all food acids, steam and cleaning solutions. They are readily polished into a smooth surface where contaminants can't hide. For high product purity at practical cost, ask your equipment manufacturer for Nickel Stainless Steel.

*Trademark Micro-metallic Division, Pall Corporation, Glen Cove, New York

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67 Wall Street INCO New York 5, N. Y.

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FOOD PROCESSING

(Food Processing Preview)

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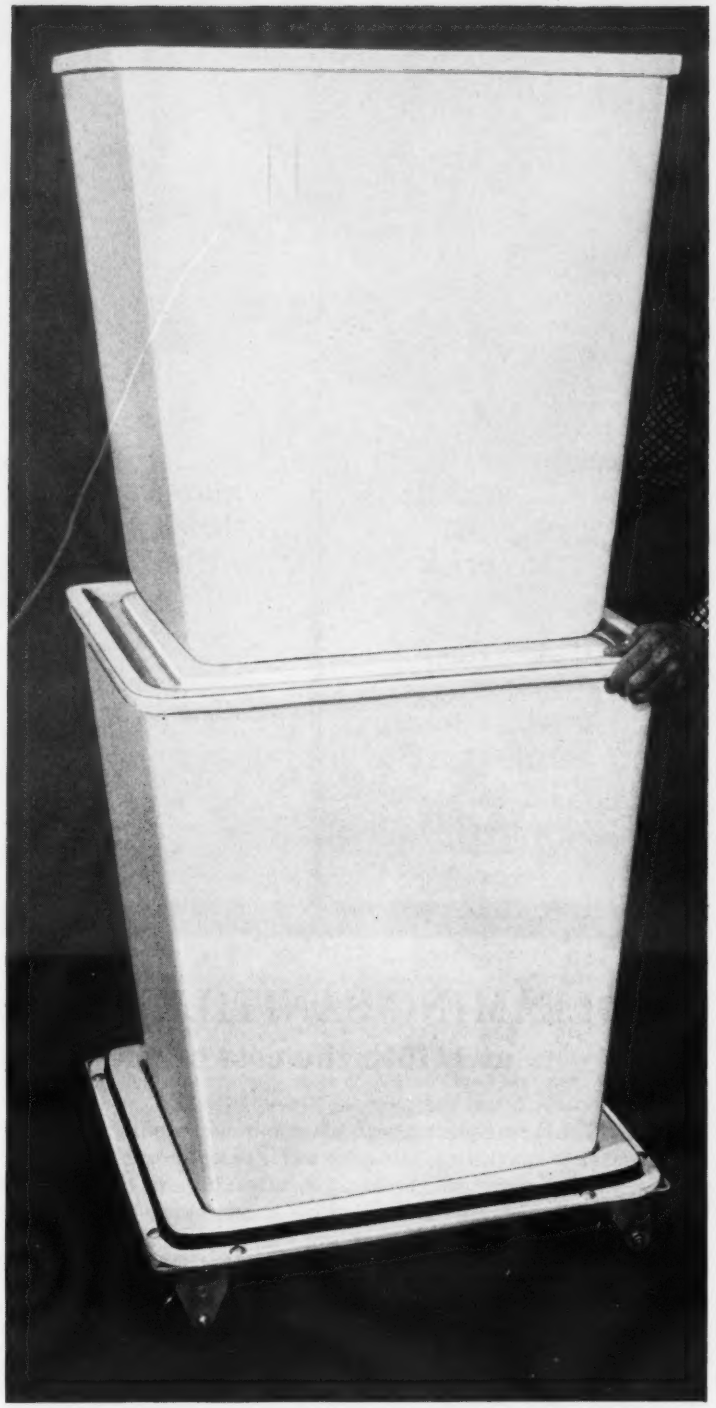
GOODYEAR

NEW 55-GALLON FIBERGLASS REINFORCED PLASTICS BIN FOR YOUR FOOD-PROCESSING JOBS

Press-molded on matched steel dies for maximum strength

Approved by Meat Inspection & Poultry Divisions, USDA
Approved by Canadian Dept. of Agriculture—Food and Drug Directorate
Not Subject to requirements of Food Additives Amendment of 1958
Stronger, more rigid than other types of plastic bins—can be double-stacked or nested to save space
Can't rust or corrode
Cleans Easier for lowest maintenance cost
Costs less than ½ as much as other approved bins
Measures 28" high, 25½" x 25½" at top, 20½" x 20½" at base
Weighs only 35 lbs.—⅓ as much as metal bins. Available with lid, lid seal and clamp assembly, and dolly
This new bin is a smaller version of the press-molded 260-gallon Goodyear reinforced plastics bin which has saved 800 American and Canadian meat packers more than $2,000,000. Want to know more? Please write Goodyear Aircraft Corporation, Dept. 914UH, Akron 15, Ohio.



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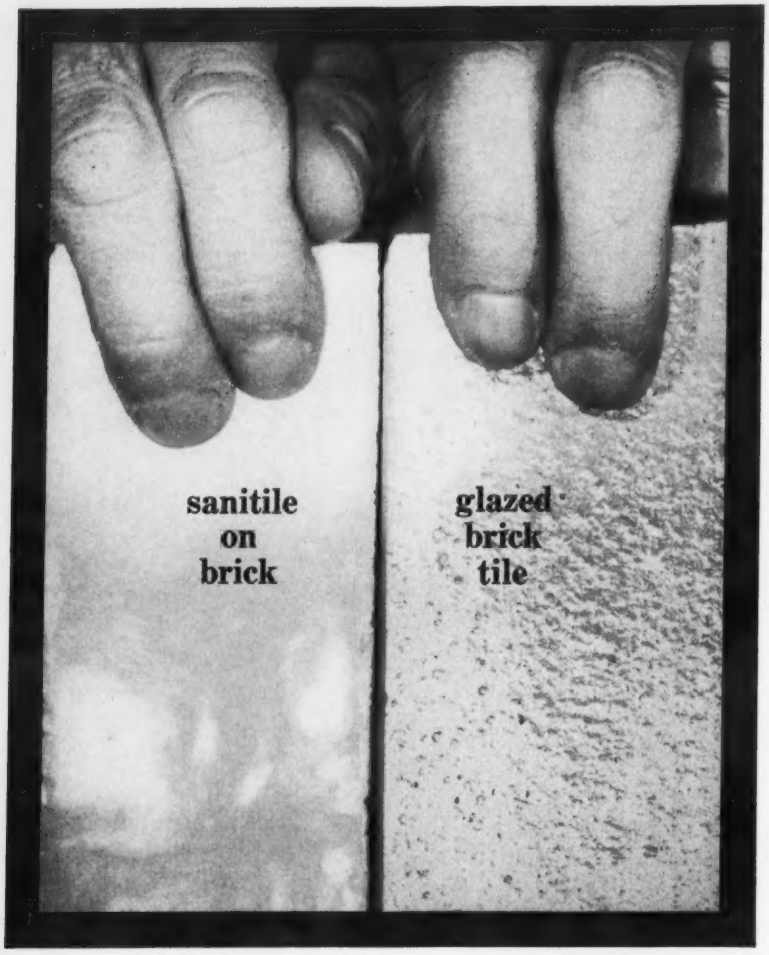

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at 1/15th the cost of tile

SANITILE transforms your plant into a gleaming show place... creates a sparkling, tile-like surface over present walls and ceilings... produces the sanitary advantage of tile at 1/15th the cost of tile. Sanitile is applied by brush, spray or roller by your own help... without processing stoppage... saves the cost and inconvenience of 2 to 4 repaintings. Used throughout the world by leading food processors.

SANITILE meets exacting sanitary requirements for smooth, washable, hard surfaces over cement block, brick, plaster and composition board. Sanitile resists steam hosing, condensation, water, acids, alkalies, oils and greases... checks and resists fungus, mould and bacteria. Write for booklet AIA 23G, *The Master Mechanics Co., Cleveland 28, Ohio, or The Master Mechanics Chemicals Co. (Canada) Ltd., Toronto 14, Ontario.*

THE MASTER MECHANICS COMPANY

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PRODUCTS AND PACKAGES

No tipping . . .

. . . for this carton when on lift truck forks or in warehouse stack, thanks to its No. 1-type perforated, non-slip top. New shipper for glass-packed whole and sliced mushrooms of Dawn Fresh Co., Niles, Mich., has printed guidelines for easy conversion into a tray-pack for retailer shelves.

Suppliers: Shipping cartons by Owens-Illinois Glass Co., 14th & Adams Sts., Toledo 1, Ohio.

7189 on Reader Service Slip.

Anchor Hocking Glass Corp., Lancaster, Ohio.

7190 on Reader Service Slip.

Skin-tight six-pack . . .

. . . introduced by Gladiola Biscuit Co., Dallas, marks first use of a shrinkable film for multi-packing, and first multi-pack application of any kind for refrigerated biscuits.

New multi-pack will simplify store handling and price-marking of refrigerated biscuit inventories — just four six-packs per case to handle and mark instead of 24 individual biscuit canisters.

Film's unusual clarity (note cut) enhances sales appeal of the canisters' colored aluminum foil labels.

Suppliers: "Reynolon" oriented polyvinyl chloride film overwrap by Plastics Div., Reynolds Metals Co., Richmond 8, Va.

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Foil canister labels by Reynolds Metals Co., Richmond 8, Va.

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Model U-6 heat-sealing overwrapping machine, adapted for canister multi-packing, by Package Machinery Co., E. Longmeadow, Mass.

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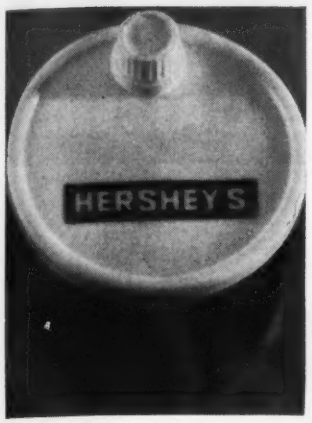
Keen interest . . .

. . . is reported by The Nestle' Co., Inc., in four test-market areas, for its new instant soft drink mix. Each 13-oz jar of Keen instant mix makes 16 tall glasses of lemonade, orange, cherry or grape soft drink, simply by adding water. Product is well laced with Vitamin C, and has sugar added.



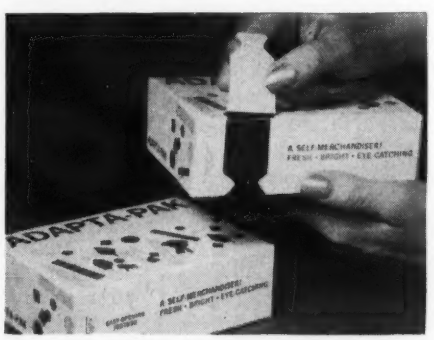
No dribble, no drip . . .

. . . down sides of chocolate, juice or baby formula cans is the aesthetic and practical benefit provided by new "Pour-N-Seal" plastic reusable closure-dispenser available in several can sizes. Similar units soon may be available for glass jars.

Made of Du Pont's "Alathon" 37 polyethylene, cap is snapped on after can end has been punctured or cut out. Unique venting system keeps contents from surging, and allows easy disassembly for cleaning. Plastic cap covers spout when not in use.

Hershey Chocolate pictures and describes the closure on its syrup-can labels, and responding customers receive two such tops for 25 cents.

Supplier: Siax Industries of Massachusetts, Inc., 216 Woodcliff Rd., Newton Highlands 61, Mass. 7191 on Reader Service Slip.



Wrapperless folding carton . . .

. . . aptly named "Adapta-Pak," can be set up, top-loaded and hot-melt sealed at 200-300 per min on existing "Kliklok packaging lines. Instead of outer wrap, inner wrappings or inside containers to protect contents, a three-flap lid — sealed securely to outer sides of carton after closing — prevents carton being pulled apart in store freezers, or from handling.

Optional pull-tab (shown) or tear-tab are available for easy opening. Surface design can be offset or letterpress printed directly on carton, which comes with any of three moisture-resistant surfaces: regular, high-gloss wax or polyethylene.

Suppliers: "Adapta-Pak" cartons by Container Corporation of America, 38 S. Dearborn St., Chicago 3, Ill. 7192 on Reader Slip.

"Adapta-Pak" cartoning equipment by Atlas General Industries, Inc., Kliklok Automated Packaging Div., 730 Broadway, Redwood City, Calif. 7193 on Reader Slip.

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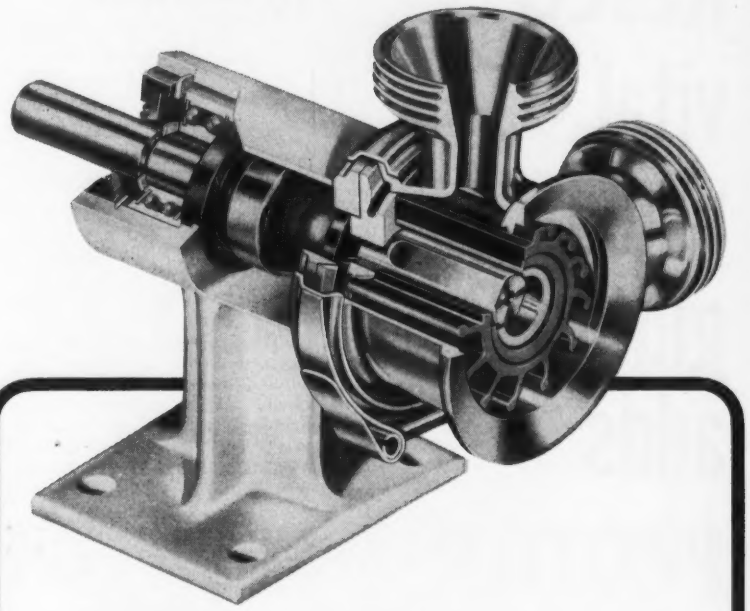
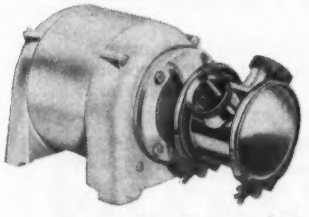


HOW YOU CAN REDUCE OVERHEAD WITH JABSCO *PUREFLO*® SANITARY PUMPS

Food and dairy processors enjoy substantial reductions in *initial cost, cleaning time* and *maintenance* expense with the newly expanded line of Jabsco Stainless Steel Pumps. With only one moving part – a single, resilient impeller – Jabsco Pureflo Pumps are available in four basic capacities – 10, 25, 50 and 100 GPM – to provide the proper flow for practically any product transfer job. Pureflo Pumps are designed as close-coupled motor pump units or pedestal mounted ball bearing pumps, and are available with standard impellers or special high pressure impellers for higher head applications. The flexible impeller is non-toxic, tasteless and odorless, while parts in product contact are stainless steel, precision machined, passivated and highly polished. Sanitary Acme Thread ports in all models; 10 and 25 GPM units also available with Clean-In-Place ports. Get the cost-reducing story from any of the over 1000 Jabsco distributors in the U. S. and foreign countries.

Write for illustrated brochure and technical information.

Instantly self-priming
Clean, sanitary design
Compact and portable
Pumps either direction
Highly adaptable
No foaming or churning



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JABSCO® PUMP COMPANY
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KESCO vital wheat gluten adds PROTEIN to your products... VITALITY to your sales

Today's consumers are "high protein" conscious. You can meet this demand for protein in your new products with the addition of small amounts of Kesco Vital Wheat Gluten to your formula.

Many food processors are also putting new life in established products by adding Kesco Vital Wheat Gluten. Such "renewed" products are often marketed at premium prices.

Kesco Vital Wheat Gluten has no taste . . . will not change flavor of original product. But, it does give you a strong new selling feature.

For samples, prices and more information on the many possible uses of Kesco Vital Wheat Gluten call or write:

THE KEEVER STARCH CO.
538 East Town Street
Columbus 15, Ohio

Processors of grain products for industry since 1898

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PRODUCTS AND PACKAGES continued

Gourmet salad dressings . . .

. . . sour cream, roquefort and thousand island, introduce fresh cultured cream in place of customary oil or mayonnaise base dressings, packed with preservatives. The quality refrigerated products are processed by Broughton's Farm Dairy, Inc., Marietta,

Ohio, at company's new food division plant in Parkersburg, W. Va.

Supplier: Jars and colored metal screw-off closures by Hazel-Atlas Glass Div., Continental Can Co., 100 E. 42nd St., New York 17, N.Y.

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Fortified sugar . . .

. . . introduced by Sugarlogics World Corporation of Delray, Fla., is result of process which restores the large amounts of vitamins, minerals and other nutrients normally discarded in commercial sugar refining.

By packing products in 3-mil polyethylene bags, Sugarlogics achieves both eye appeal and moisture protection for the 27 moisture-sensitive enriching nutrients.

Supplier: Polyethylene bags by The Dobeckmun Co., A Division of The Dow Chemical Co., P.O. Box 6417, Cleveland 1, Ohio.

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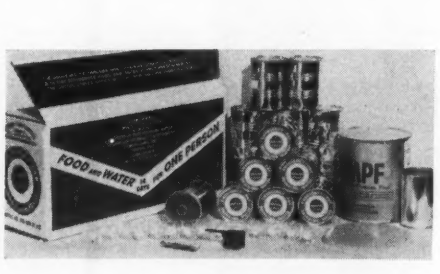

A case of survival!

Food and water survival kit capable of sustaining one person for 14 days was developed to meet growing demand from civil-defense-minded individuals and institutions; also is excellent emergency kit for boat or airplane owners, persons living in hurricane or tornado belts, Himalayan mountain climbers, etc.

Twenty-four-lb kit contains a basic nutrient — Multi-Purpose Food, a General Mills product — plus 14 pints of vacuum-packed water, vitamin C supplement and utensils.

Single kit for $8.98, postage paid, anywhere in U.S., from SURVIV-ALL, Inc., 515 Madison Ave., New York 22, N.Y.

Dow Corning SILICONE DEFOAMERS

CHOP OPERATION COSTS

Most effective. Dow Corning silicone defoamers are best for banishing space-filling, time-eating foam in the processing of any foamer . . . from asphalt to beans to peas to zeins. Dow Corning Silicones start quicker, last longer. Eliminate messy and unsanitary foam-overs. Turn maintenance into production time.

Most efficient. Even the most violent foamers are tranquilized with a tiny amount of a Dow Corning silicone defoamer — often one part silicone solids per 10 million parts foamer is effective. For true economy, change to a Dow Corning antifoamer or defoamer. There's one just right for your product and system — oil, aqueous or food.

FREE SAMPLE

Send today for a generous trial sample and full data. Please specify type of system. Address Dow Corning Corporation, Midland, Michigan, Dept. 4920.

first in silicones **Dow Corning**

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conventions and exhibits

Aug. 21-25. Gordon Research Conference on Food and Nutrition, Colby Junior College, New London, N.H.

Sept. 3-8. American Chemical Society, 140th National Meeting and 11th National Chemical Exposition (Sept. 5-8), International Amphitheatre, Chicago.

Sept. 11-13. Second Biennial Symposium on Foods (1961 theme — "Oxidative Deterioration of Food Lipids"), Oregon State University, Corvallis.

Sept. 11-15. Instrument Society of America, Fall Instrument-Automation Conference & Exhibit, and ISA's 16th annual meeting, Sports Arena, Los Angeles.

Sept. 15-19. American Meat Institute, annual meeting, Palmer House, Chicago.

Sept. 25-28. Institute of Sanitation Management, annual conference & show, Sheraton Hotel, Philadelphia.

Sept. 26-27. Research & Development Associates, Third Military-Industry Conference (current status of freeze-dried foods, and of flexible packaging for freeze-dried and other foods), La Salle Hotel, Chicago.

Oct. 7-12. American Bakers Assn. and Bakery Equipment Manufacturers Assn., 1961 Bakery Industry Exposition, Convention Hall, Atlantic City.

Oct. 18-20. The Packaging Institute, 23rd annual national Packaging Forum, Biltmore Hotel, New York.

Oct. 21-25. Midwest Feed Manufacturers Assn., Centennial Nutrition Conference, Hotel Muehlbach, Kansas City, Mo.

Oct. 24-25. Fifth Milk Concentrates Conference, Dept. of Food Technology, University of Illinois, Urbana.

A symbol for a perfect pack...

DIAMOND CRYSTAL FLAKE-TYPE SALTS

- Uniformly 99.95% Pure
- Uniform in the size and grain you need—EVERY TIME

Diamond Crystal Flake-type Salts, made by the exclusive Alberger process, assures a flake-like crystal of extremely high purity. Precision screening provides a wide range of sizes to meet all requirements. This high purity and controlled size represents a MEASURABLE MARGIN OF SUPERIORITY over ordinary granular-type salts.

Diamond Crystal Flake-type Salts contain less than 20 parts per million insolubles. Filter pad tests consistently indicate that it has the lowest content of insoluble matter or foreign material of *any* canning salt. The low content of injurious compounds (calcium, magnesium) and trace metals provides the required purity that permits still further up-grading of your product. The unmatched cleanliness of this salt avoids reaction with oxalates and formation of white precipitate. Because of this, Diamond Crystal Flake-type Salts bring out the natural flavor of your product.

Learn exactly how these product features can benefit you. Call or write the nearest Diamond Crystal sales office.

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U.S.P.

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More and more food processors gain security by specifying J. T. Baker Calcium Chloride, U.S.P. Granular and other fine chemicals made to precise standards of purity.

Every lot of Baker's Calcium Chloride is controlled to conform to all the requirements of the current U.S. Pharmacopoeia. The product is in the form of the dihydrate and is free-flowing for easy handling. Available for scheduled deliveries in truckload or lesser quantities.

MAIL COUPON for information about J. T. Baker CALCIUM CHLORIDE, U.S.P. or other fine chemicals for the food industry.

____ Calcium Chloride, U.S.P. Granular
____ Ammonium Chloride, U.S.P. Granular
____ Ammonium Sulfate, Purified Granular
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____ Potassium Bromate, Purified Powder
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J. T. Baker Chemical Co.
Phillipsburg, New Jersey

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food regulations

Cheating, mislabeling widespread, food and drug officials charge

AFDOUS President Wright says more of food industry is dishonest than honest, that top firms are guilty, not just 'a few fly-by-night sharpies'

Economic cheating, false claims, and mislabeling held the attention of the 65th Annual Conference of the Assn. of Food and Drug Officials of the United States (AFDOUS) in Washington, D.C.

Representatives from all walks of officialdom pointed accusing fingers at food processors and drug makers. AFDOUS President Evan Wright went so far as to imply that more of industry is dishonest than is honest.

Wright, director of the Kansas food and drug division, declared that P. T. Barnum's motto's "there's a sucker born every minute," now guides the packaged food, drug and cosmetic industries. He insisted repeatedly that he was talking about leading firms, not "fly-by-night sharpies."

Said Wright: "We are told that only the 'fringes' of our industries engage in dishonest practices. If this be so, the fringe is larger than the garment."

Wright, nationally known as an aggressive food law enforcer, singled out for criticism flavored doughball "blueberries" in pancake mix and wheat germ, the claims for which were based on studies of breeding cows. He warned that "increasing chicanery" must lead to government control.

In the audience sat a more than casually interested spectator, FDA Commissioner George P. Larrick. Larrick agreed emphatically with Wright and called the AFDOUS president's speech "hard hitting." Larrick pointed out that the short-weight, advertising, labeling, and packaging abuses grew up while FDA was concentrating on health factors. Larrick called for federal and state cooperation for a concerted attack on food law violators.

The FDA commissioner repeated an invitation made a week earlier at the National Conference on Weights and Measures: Join a program under which state officials are commissioned as FDA agents for the purpose of collecting and examining samples of foods originating outside their states. Here, in Larrick's words, is how the program has worked so far in the animal feed area:

"When such examinations

Up-to-date flavoring GRAS list

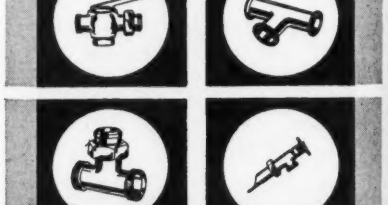
A listing of 662 food flavoring substances that are now "generally recognized as safe" and therefore excluded from the Food Additive Law appears on page 58.

Included are 403 synthetic flavoring substances which were declared GRAS early in June by the Flavor Extract Manufacturers Assn. plus 259 the association had previously declared to be GRAS.

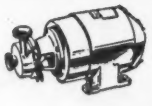
Take down and assemble in seconds with...

PROVEN CLAMP CONNECTIONS

Looking for a set-up on which to standardize? The answer is Thomsen stainless steel lines and fittings. Key to maximum efficiency for clamp-in-place or take-down lines is the new Thomsen vise action clamp which has more exclusive features than any clamp on the market. Go Thomsen all the way with pumps, tubing, fittings and valves. They will provide valuable engineering counsel on request.



THOMSEN MONO-MOUNT SANITARY PUMP



Here at last is the common sense sanitary pump design. The new Mono-Mount makes assembly and disassembly fast and easy. Stainless steel—no rust, no corrosion, easy cleaning.

FREE—New Thomsen clamp and fittings catalogs—write Department F

L. C. THOMSEN & SONS, INC. KENOSHA, WIS.

7201 on Reader Service Slip.

(of feeds collected by state officials) have shown sufficient shortages in feed nutrients, the states have forwarded the facts to us and we have been able to bring action, either seizure or prosecution, under the Federal law for violations detected. We have been unable to reimburse the states for their time and expense in this endeavor, but I believe they are satisfied that the benefit to their citizens far outweighs the relatively minor expense of the cooperative effort in which they are engaged."

FDA again loses court case against Delson's packaging

New Jersey Federal District Court has for the second time ruled in favor of Delson Candy Co., New York, in the Delson Thin Mints packaging case. Ignoring the hint from the appeals court which remanded the case for further consideration, Judge Reynier J. Wortendyke again ruled that the Delson package is not misleading.

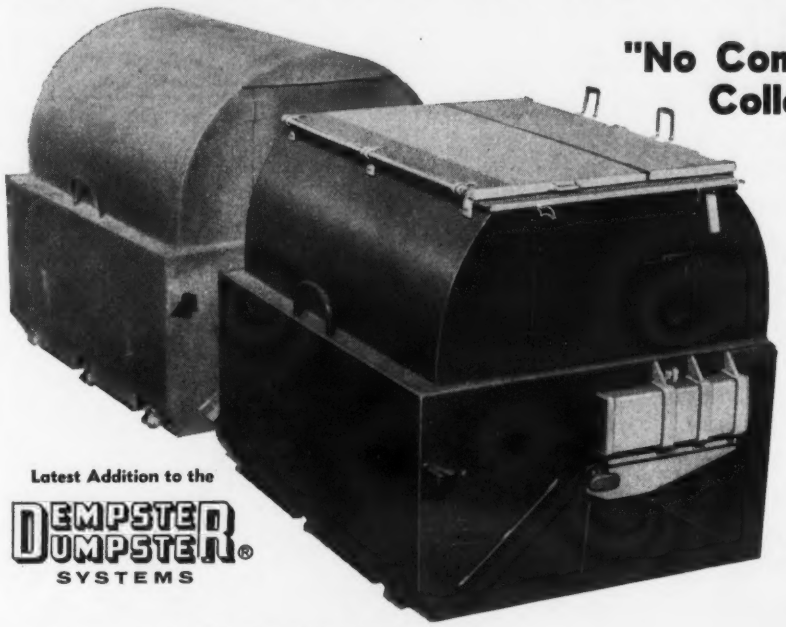
The court held that section 403(d) of the Food, Drug, and Cosmetic Act is unconstitutionally vague, indefinite, and uncertain, and contravenes the due process clause of the Fifth Amendment of the Constitution if it is applied to bar the use of Delson's package. This time, Judge Wortendyke supported his finding of law with 28 findings of fact.

The basis of the Third Circuit Court of Appeals' decision to remand the case had been the lower court's failure establish findings of fact to support its opinion. In sending the case back to the district court, the appeals court referred to a number of concepts, including:

1. The correct standard for evaluating a container is whether it would likely mislead the ordinary purchaser of this type of merchandise.

2. The package may not be filled with excessive padding. Judge Wortendyke's findings of fact pointed out that the Delson mints are dome-shaped, concave and convex,

New SUPER DUMPMASTER Handles Converted DUMPSTER Containers...Beats Long-Haul Problem



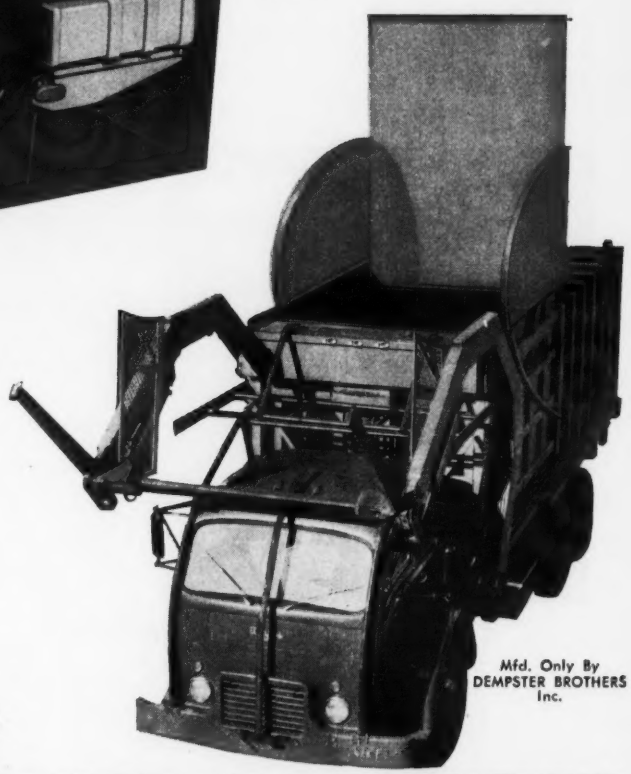
Latest Addition to the DEMPSTER DUMPSTER® SYSTEMS

"No Container Haul System" Collects Refuse on Spot

If longer trips to disposal areas have raised your operating costs, a small investment in conversion kits protects large investments in DUMPSTER containers. The Super DUMPMASTER handles converted DUMPSTER containers up to 12 cu. yd. and all DUMPMASTER containers one thru 12 cu. yd.

Owners of DEMPSTER-DUMPSTER Systems who now face long haul problems due to movement of disposal areas may now convert from their present "container haul" system to the new SUPER DUMPMASTER "no-container-haul" system without abandoning their investment in DUMPSTER Containers.

The SUPER DUMPMASTER makes its rounds to each converted container, mechanically empties the contents into its 30 cu. yd. packer body and compacts the material to a fraction of its former volume with the 85,000 lb. force of its packer plate. Rather than haul each container to the disposal area, the SUPER DUMPMASTER carries the contents of many containers on each trip, cutting collection costs drastically.



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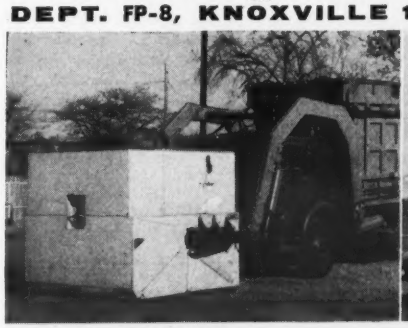

The SUPER DUMPMASTER engages container

Clearance arms carry it toward hopper opening.

Container is rotated, emptying contents into the compaction body.

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STEPHENS-ADAMSON

moves bulk material en masse vertically — horizontally — on inclines or around bends with

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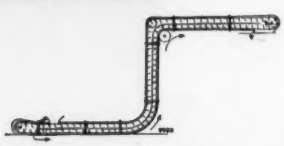
CONVEYOR-ELEVATOR SYSTEMS

S-A REDLER Conveyor-Elevators have a coveted 25 year reputation of successful operation. Well over 20,000 units handle a wide range of pulverized, granular, small lump and flaked materials in plants throughout the world. The REDLER Conveyor-Elevator moves material by EN MASSE action horizontally, vertically, on inclines or around bend corners. Material movement is continuous within totally enclosed, dust-tight compact casings, permitting large tonnage handling in small space. REDLER Conveyor-Elevators can be adapted to removing solids from a liquid bath in solvent extraction plants. The conveying elements, a series of U-type skeleton flights shown above in cut-away, move readily around sprockets and bend corners with relatively low power required at the drive. Skeleton flights may be easily unhooked and replaced without tools. S-A REDLER Conveyor-Elevator Systems speed efficiency reducing bulk materials handling to lowest cost per ton.

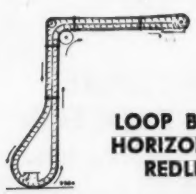
L-TYPE REDLER

Lower run can be horizontal or inclined. Elevating run can be operated at any required inclination. Special discharge openings can be spaced anywhere. Discharge to any one of three sides. Many variations of standard L-Type system available.



Z-TYPE REDLER

Combines two horizontal conveyors and one vertical elevator into one compact unit. One feedpoint, one discharge and one drive. Feed from choked feedpoints on horizontal run.



LOOP BOOT HORIZONTAL REDLER

Simplest form for elevating material up steep inclines. Column of material is supported on all four sides at inclines above the angle of slide for materials handled. Low headroom for feedpoints. Discharge gates placed wherever needed.

HORIZONTAL CLOSED CIRCUIT REDLER

"Run-around" type system employs side-pull conveying element. Permits conveying in several directions on horizontal plane. Available in two-way version featuring 180° bends and four-way version featuring 90° bends.

WRITE FOR BULLETIN 358

S-A
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SEALMASTER® BALL BEARING UNITS
SPHERICO™ BEARINGS & ROD ENDS

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rather than flat, and that package designs that protect flat mints would not protect Delson mints. In connection with package design, he also traced the history of several different packages tried and discarded.

As to whether the package was misleading, the court observed that "only about 25% of those interviewed by a market research concern used by the government were motivated in their choice of packages by size rather than price."

The court noted that FDA had received no complaints on the Delson package from consumers, state or city officials. The only complaint of record was from a Delson competitor, Deran Confectionary Co.

FDA has filed a report with the U.S. Solicitor General. The agency asked to be allowed to appeal the decision again.

The government's setback in the Delson case went relatively unnoticed amid the hue and cry going on in Sen. Hart's (D., Mich.) antimonopoly subcommittee on food packaging. SRO hearings treated the consumer press to lively testimony from a number of specialists on food or on consumer interests who decried alleged abuses on food package labeling and descriptions and urged new legislation to counter these abuses.

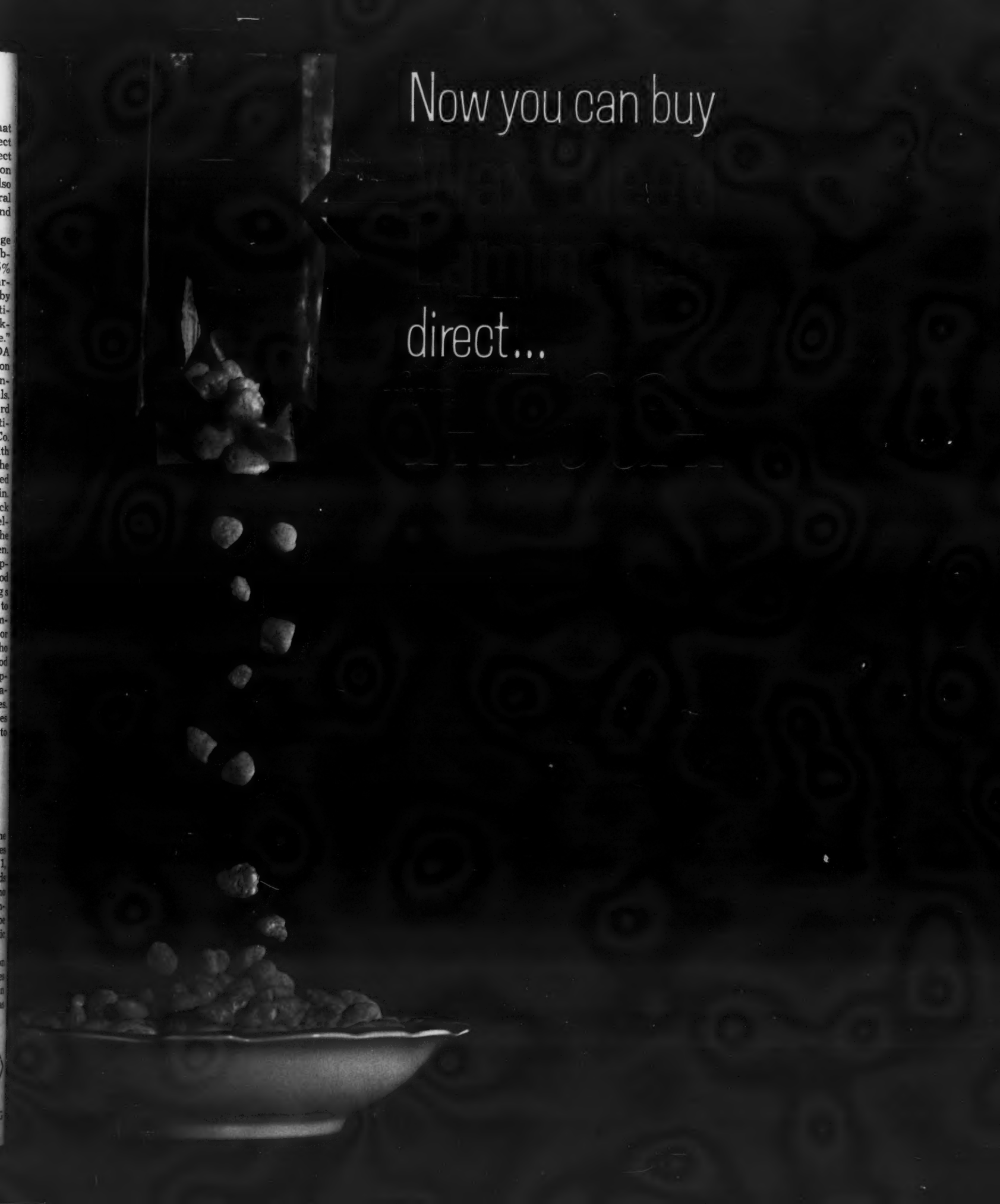
No legislation along the lines suggested, however, seems to be in prospect right now.

Food additives safety clearance time extended

FDA has extended the time for obtaining safety clearances for food additives to Sept. 1, 1961. The agency reminds processors, though, that no extension can be granted unless the substance can be shown to present no public health risk.

The automatic extension under the new food additives law signed in April was to run until July 1. The period was

For more information on product at right, circle 7204 . . . see information request blank opposite last page.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TAMPA 9, FLA.....4302 Henderson Blvd.
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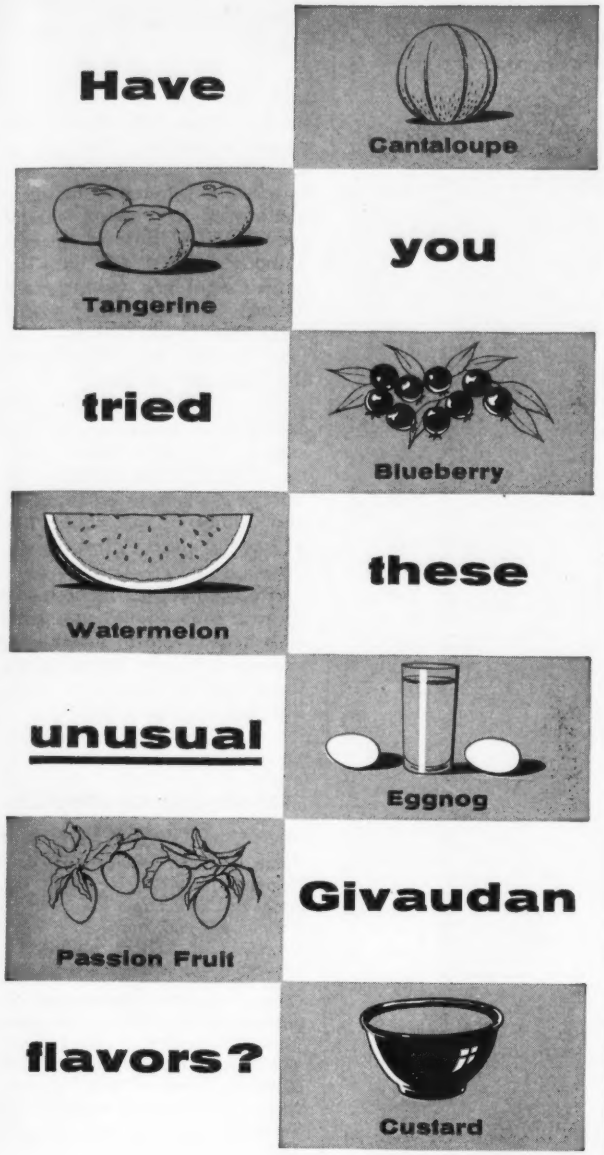
WILMINGTON 1, DEL.....825 Bank of Delaware Bldg.
WORCESTER 8, MASS.....22 Pleasant St.
YORK, PA.....205 Manufacturers Bldg.
YOUNGSTOWN 3, OHIO.....537 Ohio Edison Bldg.



If you are developing a new food product . . . or wish to change the flavor of one you now produce—consider the wide appeal of these unique Givaudan flavors.

These flavors are potential profit makers. They are extremely stable . . . uniform . . . with faithful odor and true-to-life taste. Perhaps one of them is exactly the sales builder you have been looking for!

In addition to all standard flavor favorites, Givaudan makes a wide variety of these *unusual* flavors. We will be glad to help you select and adapt the right one for your candy or food product. Write for generous test samples.

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to be used to submit necessary information, and allow FDA to evaluate it, regarding substances for which further extensions were sought. However, FDA received more requests than expected and the three month period proved too short.

Hydrogen peroxide and catalase OKed for cheese

The standards of identity for five cheeses are being changed to permit hydrogen peroxide and catalase as optional ingredients in treating the milk in the cheese-making process. The cheeses are cheddar, washed curd, Colby, granular, and Swiss.

The change was requested over a year ago by the National Cheese Institute. However, strong objections forced a hearing which was held last February.

Chief objectors were Kraft Foods, State of Wisconsin, and Wisconsin Swiss and Limburger Cheese Producers Assn. They contended that the addition of hydrogen peroxide and catalase to milk would (1) affect the quality of such cheeses as compared with cheeses manufactured from untreated milk, (2) permit the production of cheeses of apparently high quality from milk inferior in quality to that ordinarily used (3) encourage the insanitary handling of milk and retard progress in milk-sanitation programs, and (4) significantly impair the nutritive quality of such cheeses.

FDA ruled that the objectors failed to sustain their assertions.

Iowa, U.S. ice cream standards near clash

A dispute between Iowa and the federal government over whose food regulations are to prevail is developing over differing ice cream standards.

The new FDA regulations say ice cream may contain as little as 10 percent butterfat and a total of 16 percent milk solids. Iowa law requires a minimum of 12 percent milk-

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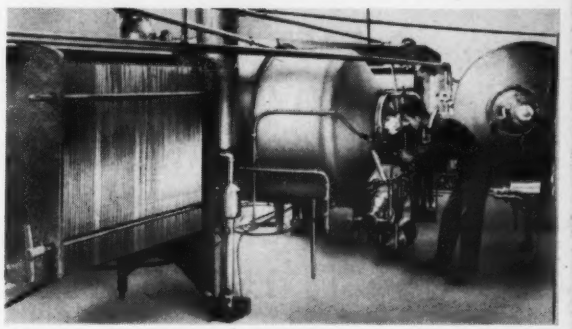
PLATE EVAPORATORS

revolutionize evaporator techniques in leading juice and industrial food product plants across the country.



Double effect with thermo-compression evaporator installed at Snively Groves, Inc., Winterhaven, Florida concentrates orange juice from 11° Brix to 60° Brix, evaporating 13,000 pounds of water per hour.

THESE BENEFITS ARE IMMEDIATE---WITH APV EVAPORATORS

- ELIMINATION OF HEAT DAMAGE — Minimum heat exposure time and hold-up quantity protects the flavor, quality and character of the product. Throughput time is as low as 30 to 75 seconds.
- COMPLETE FLEXIBILITY — Capacities and evaporating surface can be varied with quick and easy addition or removal of plates.
- QUICK START UP AND SHUT DOWN — by simple convenient controls.
- IN-PLACE CLEANING — accomplished in minutes by rapid and thorough circulation. Stainless steel sanitary construction.
- GREATER ECONOMY — Total energy consumption is low, multiple effects and recompression are easily provided.
- COMPACT, SPACE SAVING DESIGN — Average double effect unit fits in 18′ x 25′ x 9′ (high) space.

THESE PRODUCTS ARE PRESENTLY BEING PROCESSED WITH APV PLATE EVAPORATORS

JUICES — Apple Pectin, Berry Juice, Orange, Lemon, Apple, Pear, and Grape Juices.

INDUSTRIAL PRODUCTS — Glucose, Corn Steep Liquor, Sucrose, Gelatin, Malt Extract.

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Write for complete information and detailed brochure.

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Pioneers and developers of plate process equipment for the food and dairy industries.

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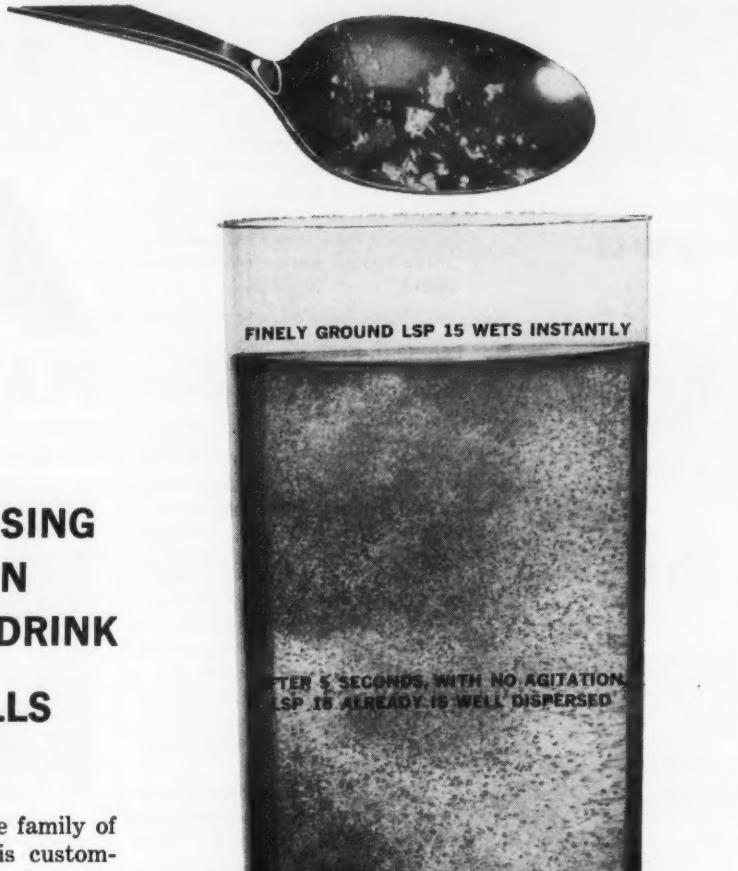

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...GENERAL MILLS LSP 15

LSP 15, newest member of the family of General Mills Soy Proteins, is custom-milled to meet the exacting requirements of the food and beverage industries.

Pulverized to ultra fine particle size, LSP 15 wets instantly, and suspends readily in liquids. Its ability to form a smooth dispersion, free of lumps is demonstrated in the photo at right. LSP 15 not only disperses readily without agitation . . . but also assists the wetting and dispersing of other ingredients.

LSP 15 is high quality protein, completely precooked for optimal nutritional value . . . with a flavor you'll like.

LSP 15 can partially or completely replace expensive proteins in food beverages without sacrifice of nutritional quality. LSP 15 suggests use in other food applications such as baby foods, sausage, meat loaves, creamed soups, sauces, bakery products, noodles and a wide variety of other related items. For more particulars on this versatile protein product, write:

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fat (same as butterfat) and a total of 16 percent milk solids.

Iowa's attorney general, in an opinion earlier this year, stated that federal requirements on ice cream would prevail: "The state of Iowa is without power to interfere with ice cream meeting the federal standards and which originated in another state, as long as that ice cream is in the original package."

The state's department of agriculture, however, has insisted that state law would be enforced regardless of the attorney general's opinion, and indicated it would like to have a court ruling on the issue.

An attempt was made in the recent session of the Iowa state legislature to lower state standards on ice cream to the new federal standard level, but this attempt failed.

STANDARDS OF IDENTITY

Final Actions

Flour standard amended (Federal Register June 28) to permit optional use of acetone peroxides for bleaching and artificial aging effects. J. R. Short Milling Co. requested the change.

Cheese standard amendment reaffirmed by FDA (Federal Register June 24) permitting use of hydrogen peroxide and catalase treatment of cheese milk for cheddar, washed curd, colby, granular, and Swiss cheese (see story on page 17).

Canned lima bean standard amended (Federal Register June 15) permitting optional use of purified calcium chloride, calcium sulfate, calcium citrate, monocalcium phosphate, or mixtures "in a quantity reasonably necessary to firm the lima beans, but in no case in a quantity such that the calcium contained in such calcium salt or mixture is more than 0.026% of the weight of the finished food." California Packing Corp. asked for the change.

Self-rising flour standard amended to permit use of sodium aluminum phosphate in both self-rising and enriched self-rising flour.

Pending

Bread standard amendment proposal to allow use of lauric acid and hydroxylated lecithin is being supported by Davidson Baking Co., American Lecithin Co., Spen-

cer Kellogg & Sons, and Food Technology, Inc.

Cream cheese standard amendment proposal would allow optional use of guar gum to prevent the product from adhering to aluminum container lids. Kraft Foods is asking for the change.

Shrimp: Proposed amendment to standard for frozen raw breaded shrimp would allow simple declarations on label of the names of spices used and their purpose (i.e., spice, color, or spice and color). Change is sought by the American Spice Trade Assn.

DIRECT ADDITIVES

Clearances

Flavoring: 403 more flavoring substances added to the 259 already listed as "generally recognized as safe" by the Flavor Extract Manufacturers Assn. (see listing on page 58).

Pesticide: A tolerance of 0.1 p.p.m. of heptachlor pesticide residues in or on snap beans, cabbage, lettuce, and rutabagas. This is a combined tolerance for heptachlor and heptachlor epoxide. Velsicol sought the clearance.

Pesticide: Exemption from tolerance requirement has been granted (Federal Register June 30) to copper hydroxide and cupric oxide when residues result from application to growing crops.

Color: FDA has exempted from certification requirements dried algae meal used in chicken feed to enhance the yellow color of the chicken skin and egg yoke. Clearance for use was requested by Grain Processing Corp.

Tranquilizer: Promazine hydrochloride has been cleared (Federal Register July 1) as a tranquilizer in feed for cattle except lactating dairy animals and horses. Wyeth Laboratories sought the clearance.

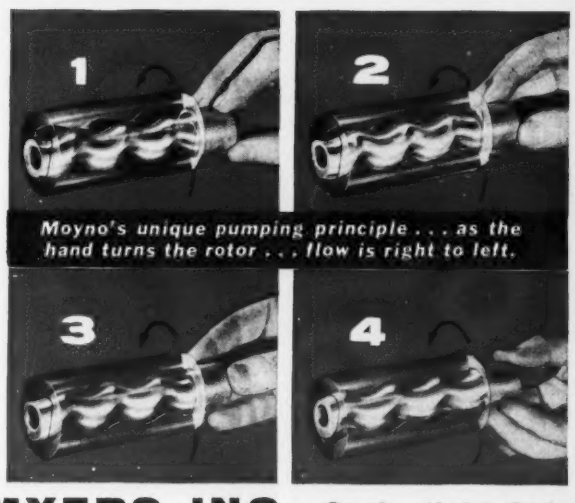
Feed: Clearance has been granted (Federal Register July 1) for up to 4 p.p.m. of diuron pesticide in dried citrus pulp for livestock feed. Such residues result from application of the pesticide to growing citrus fruits.

Beverages, desserts: Clearance has been granted (Federal Register June 24) for use of butylated hydroxyanisole as an antioxidant in dry mixes for beverages and desserts. The tolerances, sought by General Foods, have been set at 10 p.p.m. for dry mixes and 2 p.p.m. for beverages and desserts prepared from the mixes.

Chicken feed: The food additive order for hygromycin B medication in chicken feed has been amended

MOYNO® FOOD PUMPS *help the Green Giant keep the kernels whole!*

He's very fussy about the appearance of Niblets Brand corn, so Green Giant Co. uses Moynos to keep the tender kernels whole. Moyno's "progressing cavities" move all foods smoothly, without disintegration, pulsation, aeration or agitation! Variety ranges from thin soups to heavy peanut butter to chunky potato salad. Moynos keep foods pure, too! All wettable parts, except stator, are stainless steel. Stator can be stainless, synthetic rubber, odorless bakelite or other material. Smooth pumping elements can't lodge particles where bacteria might thrive. And Moynos can be dismantled, cleaned and be back on duty in minutes! Moyno food pumps are available in five sizes with capacities to 175 gpm and pressures to 75 psi. Write today for new Bulletin 100-FP.



Moyno's unique pumping principle . . . as the hand turns the rotor . . . flow is right to left.

ROBBINS & MYERS, INC., Springfield, Ohio

Fractional and Integral HP Electric Motors • Electric Hoists and Overhead Traveling Cranes • Moyno® Industrial Pumps
Propellair® Industrial Fans • R & M-Hunter Fans and Electric Heat • Trade-Wind Range Hoods and Ventilators
Subsidiary companies at: Memphis, Tenn., Pico Rivera, Calif., Brantford, Ontario.

7208 on Reader Service Slip.

to delete the required label statement that "the medicated feed should not be used for laying hens." Lilly's Elanco Products Division asked for the amendment.

Petitions

Pesticide: The Arsenic Industry Committee has withdrawn its request for a tolerance of 5 p.p.m. of o-arsenic acid in or on raw cottonseed. Dow has withdrawn its request for a tolerance of 10 p.p.m. for ronnel systemic insecticide in fat of cattle, goats, hogs, and sheep.

Agricultural chemicals: Extensions under the recent transition legislation have been granted to six chemicals under the Cooley Law: arsenic acid, on cotton to defoliate, to July 1, 1962; p-chlorophenoxyacetic acid, on bean seeds in sprout production to eliminate embryonic root development, to Jan. 1, 1964; 1,2-dibromo-3-chloropropane, soil fumigant for nematodes, to Jan. 1, 1962; 2,4-dichlorophenoxyacetic acid, on potatoes to intensify color, to Jan. 1, 1964; sodium chlorate with added sodium metaborate, on potatoes as a defoliant on rice and sorghum (milo) as a desiccant, to July 1, 1962; 2,3,4,6-tetrachloronitrobenzene, on potatoes to inhibit sprouting, to June 30, 1964.

Starch: Petition filed by Corn Industries Research Foundation would change the name of "modified starch" to "food starch — modified," permit use of modified industrial starch as sizing or coating for textiles, and provide for modification of food starch with 11 additional substances. (Federal Register July 1).

Vitamin B-12: Petition filed by Geigy for use of disodium ethylenediamine--tetraacetate in aqueous multivitamin solutions containing vitamin B-12.

Pet food: General Foods has petitioned for use of sodium nitrite up to 20 p.p.m. in canned pet food.

Feed: Food Machinery and Chemical Corp.'s Niagara Chemical Division seeks to increase the tolerance for ethion pesticide in dehydrated citrus pulp for feed from 5 p.p.m. to 15 p.p.m., and to establish a tolerance for ethion of 3 p.p.m. in or on lemons, tangelos, and tangerines under the Miller Pesticide Law.

Pesticide: Monsanto seeks a tolerance of 3 p.p.m. for residues of ethoxyquin in or on pears.

Pesticide: Union Carbide requests a tolerance of 5 p.p.m. for residues of 1-napthyl N-methylcarbamate (Sevin) in or on poultry.

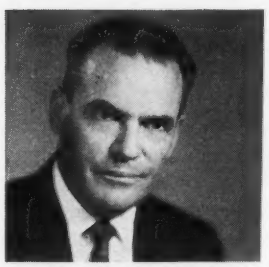
Dillon's Model Food Center, Hutchinson, Kansas

STYROFOAM®

APPROVED STYROFOAM REG. T.M. INSULATION CONTRACTOR

Dow Approved Insulation Contractor for new Food Distribution Center ..."so efficient we had only to review inspection reports"

"We selected a Dow Approved Insulation Contractor to install 370,000 board feet of Styrofoam in our new Food Center," says Ray E. Dillon, President of J. S. Dillon & Sons Stores Company, Inc., Hutchinson, Kansas. "We've used Styrofoam insulation board in our stores for several years and its performance has been excellent.



Mr. Ray E. Dillon, President, J. S. Dillon & Sons Stores Company, Inc.

"The AIC (Mid-Continent Industrial Insulation Co. of Kansas City, Kans.) gave us the best possible installation at reasonable cost. He took care of all details and was so efficient that we had only to review weekly inspection reports."

Dillon's new Food Center is completely insulated with Styrofoam in produce wet-and-dry coolers, banana cooler rooms, and in the frozen food section. Styrofoam provides a *permanent* low "K" factor, won't soak up water or water vapor, won't freeze, swell or crack. And Styrofoam is so easy to handle that installation time is reduced to a minimum.

The Dow AIC seal is displayed only by insulation contractors carefully selected for their excellent business reputation and high quality workmanship. For the names of the AICs nearest you, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1541BH8.

Styrofoam is a registered trademark of The Dow Chemical Company. It is applied only to the homogeneous expanded polystyrene made according to an exclusive Dow process. Styrofoam brand insulation board is available only from Dow and its authorized representatives.

THE DOW CHEMICAL COMPANY DOW Midland, Michigan

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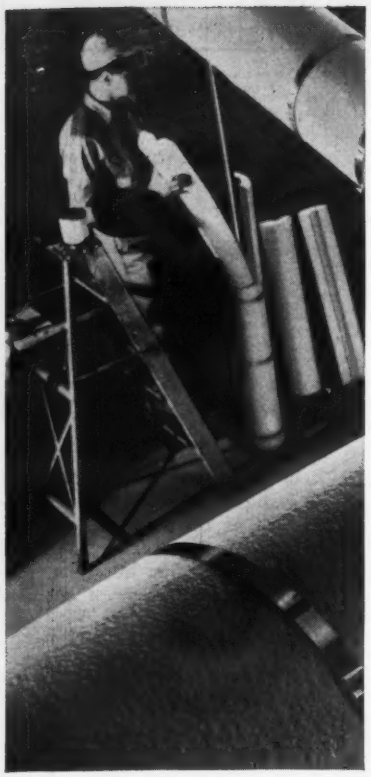


Stops moisture...

STYROFOAM®

for pipe covering insulation

Low-temperature pipe covering made of Styrofoam does an excellent job and requires minimum maintenance. Its unyielding resistance to moisture and its permanent low thermal conductivity prevent condensation and dripping—reduce heat transfer.

Pipe covering made of Styrofoam will not crack or split from thermal shock. Since it does not absorb water, it is not affected by ice build-up around uninsulated valves. It's lightweight and easy to apply. A complete line of pipe and vessel covering made from Styrofoam is available from the following fabricators:

COLUMBIA ASBESTOS CO., Portland, Ore. • ENGINEERED FOAM PLASTICS CORP., Elkhart, Indiana • GLO-BRITE PRODUCTS INC., Chicago, Illinois • KENNEDY INDUSTRIES, Los Angeles, California • KRANSCO MANUFACTURING COMPANY, South San Francisco, California • MMM INCORPORATED, Houston, Texas • ROBINSON INDUSTRIES, Coleman, Michigan • STYRO FABRICATORS, Kansas City, Kansas • STYROFORMICS, INC., Somerville, Mass. • STYROPLASTICS, INCORPORATED, Minneapolis, Minnesota • TUFFLITE PLASTICS, INC., Ballston Spa, New York

DOW

7210 on Reader Service Slip.

ZERO Code adopted by AFDOUS

Specifies 0°F with 10° tolerance for temporary conditions

THE FROZEN FOODS CODE of AFDOUS (Association of Food and Drug Officials of the United States) was officially adopted at their recent annual meeting in Washington, D. C. It is intended to serve as a quide for the various state and city regulatory officials in setting up their own regulations. It will be published in the quarterly Bulletin of AFDOUS later this year.*

The main difference between the code finally adopted and the proposed code previously published is in organization and format of contents and in wording of phrases to make the meaning clearer and less subject to different interpretations. It does not cover bacteriological levels.

One of the changes concerns the method of determining the temperature of frozen foods by placing the sensing element between the flat surfaces of two packages instead of the meeting point of four packages.

The Code calls for maintenance of zero temperature or lower at all times in the handling and (retail) display of frozen foods with provision that under *temporary* conditions temperature of product shall not exceed 10 F.

As Food Processing has previously noted, the imminence of the AFDOUS Code the past two years has spurred industry to better handling of frozen foods by all those concerned. In addition, competitive forces are also at work. Thus, one chain, The Jewel Tea Company, has experienced a 25% increase in sales of frozen foods resulting from better quality achieved through strict adherence to zero handling practices.

Most regulatory officials are taking the viewpoint that continued pressure on industry and industry's voluntary effort to better handling practices plus competitive influences will accomplish improvement at as fast a rate as economically possible in the immediate future.

Main problem areas remaining are retail display and over-the-road transportation, especially that concerned with route delivery.

Voluntary Code as promulgated by industry (reported by Food Processing last month) is presumably a realistic timetable for modernizing *transportation* equipment to meet the Zero Code as rapidly as possible:

YEARS	TEMPERATURE
1961, 1962	0 F, tolerance to 15 F
1963, 1964	0 F, tolerance to 10 F
1965	0 F, tolerance to 5 F

However, when compared with the AFDOUS Code, some basic differences come to light. Thus, the voluntary code states: "Over-the-road equipment purchased after March 1, 1961 should be capable of maintaining a product temperature of 5 F. Delivery trucks used for route delivery purchased after March 1, 1961, should be capable of maintaining a product temperature of 15 F."

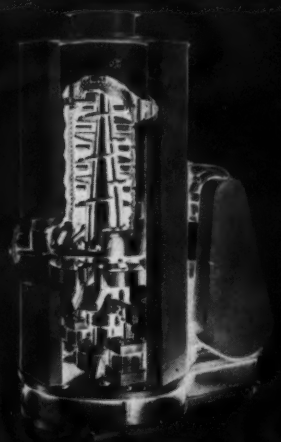
The AFDOUS Code specifies zero for both type of trucks, and no tolerance is given for the truck refrigeration systems.

No doubt, this difference between the codes will be considered again when The Frozen Foods All-Industry Coordinating Committee meets later this year to consider the adequacy of their program.

*Reprints will be made available at nominal cost and may be obtained from Joe Lakey, Secretary, AFDOUS, Bureau of Food and Drugs, Texas State Department of Health, Austin, Texas.

ANNOUNCING THE

NEW



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CONTINUOUS PRESS

The new Zenith Pressmaster . . . the culmination of 30 years of press engineering and 400 installations . . .

IS VERSATILE

Extracts fluids from virtually all fluid-yielding solids . . . apples, berries, grapes, grains, tomatoes, vegetables, etc.

IS ECONOMICAL

Self-adjusting, continuous, automatic operation. Slashes costs. No operator required. Near zero maintenance.

IS DEPENDABLE

Maintains uniform product, high yields. Heavy duty construction, holds exact spindle and screen alignment.

IS SANITARY

Anti-bacterial design. Self-lubricating bearings and completely enclosed drive eliminate contamination. Quick-opens for full interior inspection . . . 15 minute cleaning.

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ZENITH PRESS DIVISION

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The case of the thirsty dry milk that took the shrink out of sausage

A sausage maker had a problem: His sausages stayed plump in the package, but they puckered in the pan. They shriveled under heat, became less juicy, less tasty. All because of excessive fat loss.

Could a dry milk solve the problem?

It could. *If* it were a dry milk with an unusually high absorption capacity, if it were an unusually *thirsty* dry milk.

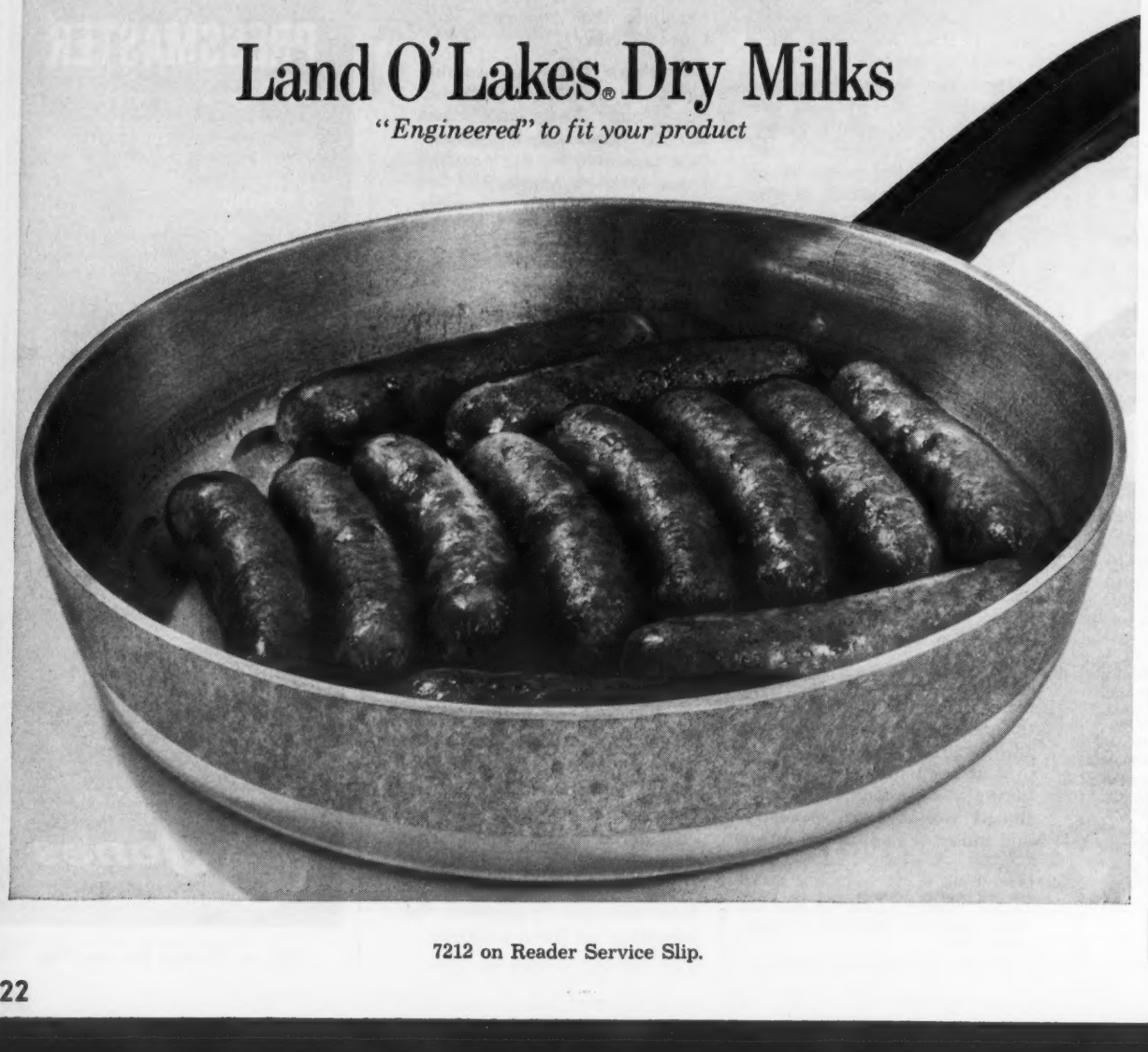
Land O'Lakes put the problem in the hands of its developmental laboratory. And from here emerged a dry milk with the thirst of a sponge in sandy Sahara.

This extra thirsty dry milk drank added fats and *retained* them. Even under frying temperatures! Result: These same sausages now stay plump in the package *and* in the pan. Taste oh, so much better.

You, too, may process a product that can benefit from one or more of our dry milks. If we haven't the precise one you need, we can *create* it. Write us. Land O'Lakes Creameries, Inc., Dept. DM-1, Minneapolis 13, Minnesota.

Land O'Lakes® Dry Milks

"Engineered" to fit your product



7212 on Reader Service Slip.

plants companies personalities

Recent key executive promotions at **A. E. Staley Manufacturing Co.**, Decatur, Ill., included election of **L. E. Doxsie** to vice president for the corn, grocery products and

Doxsie

Bralley

overseas divisions, and **Dr. James A. Bralley** to vice president of the research and development division. **Dr. E. Eugene Fisher** has been promoted to director of chemical research.

FMC Corporation is official new name of the former Food Machinery and Chemical Corp., San Jose, Calif.

Milton E. Parker, long-time professor of food engineering at Illinois Institute of Technology, Chicago, has resigned to devote full time to consulting activities in caloric density control, animal feed processing and special pharmaceutical research development. His address now is: Room 1125, Field Bldg., 135 S. La Salle St., Chicago 3.

Pet Milk Company, St. Louis, plans to acquire The **C. H. Musselman Company**, Biglerville, Pa., one of the nation's leading producers of quality apple sauce, apple slices, jellies, fruit pie fillings and other fruit products. Its annual sales are well in excess of $25 million.

H. J. Heinz Company has bought via stock transaction the 58-yr-old Pittsburgh manufacturer of baking ingredients, **Hachmeister, Inc.** Dollar value of the purchase was in excess of $7 million. A. W. Remensnyder will continue as president of Hachmeister under the new organization.

More news of Plants, Companies and Personalities on pp. 23, 26, 27, 75, 81

Basic Foods, Inc.

Englewood, N.J., has elected Bernhard Illfelder vice president in charge of production. He has been with the manufacturer of Frost-O-Fast icing bases, machines and bakery ingredients since 1952.

Nalley's, Inc.

Tacoma, Wash., specialty food processors, has acquired XLNT Spanish Foods Company, Los Angeles, processors and marketers of a line of refrigerated, frozen and canned specialty foods. Distribution is by means of a fleet of refrigerated route trucks.

Corn Products Company

has begun construction, through its Brazilian affiliate in the State of Sao Paulo, of a $10 million corn wet-milling facility that will be the largest of its type in South America. Completion is scheduled for mid-1963.

Froedtert Malt Corporation

Milwaukee, major division of Basic Products Corp., now has as president Dudley G. Seay, who also is president of Basic Products. Anthony von Wening retains board chairmanship and the title of chief executive officer at Froedtert.

International Flavors & Fragrances Inc.

New York, announces that construction has begun on a new plant and company headquarters for its British subsidiary, International Flavors & Fragrances, I.F.F. (Great Britain) Ltd., at Enfield, England. Completion is scheduled for mid-1962.

FULLY DEVELOPED VOLUTE PUMP HEAD

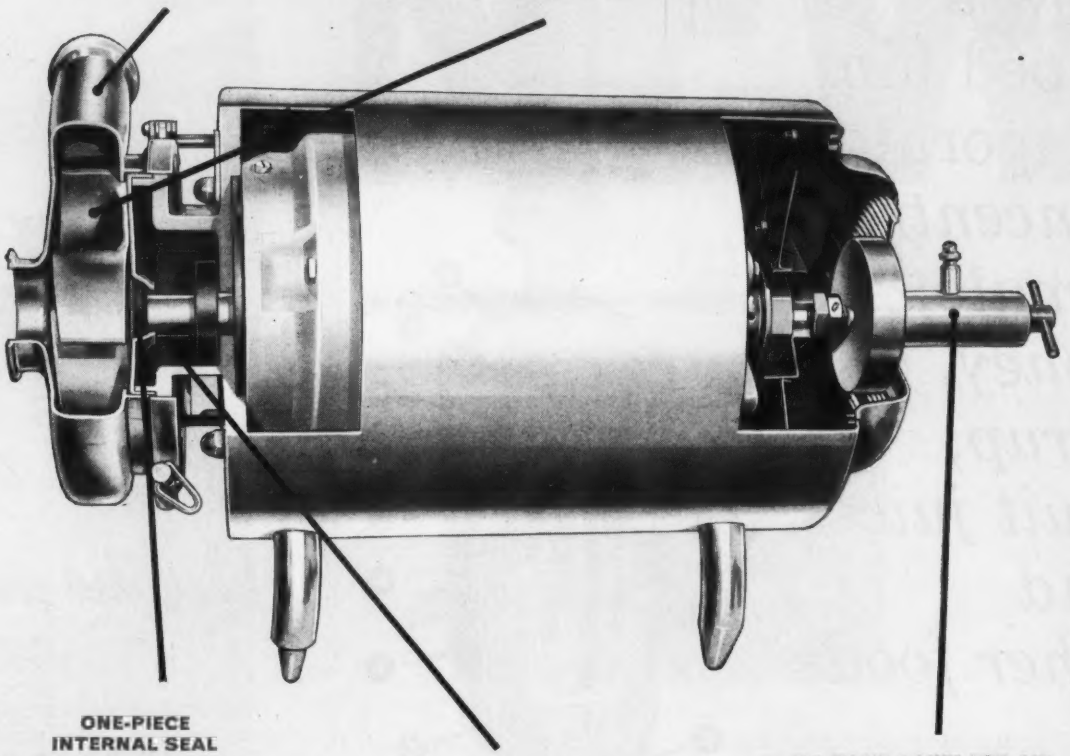
Volute-type pump head affords optimum conversion of velocity to pressure energy. Head can be rotated 360°.

ONE-PIECE IMPELLER AND SHAFT

Backward curved impeller and integral shaft assembly assures top operating efficiency and non-clogging flow characteristics. Integral stainless steel construction eliminates keys, pins and lock nuts within the casing.

SERVES ALL PUMPING NEEDS

Three models (4, 6 and 8 inch impeller sizes) in motor sizes to 25 HP—3600 RPM provide head and capacity range to meet all pumping needs.



ONE-PIECE INTERNAL SEAL

One-piece corrosion and heat resistant construction extends wear life, assures trouble-free processing and cleaning service. Unique cleaning arrangement (see opposite) allows for thorough sanitizing of seal.

CIP CHAMBER

Contains the drain-off of cleaning solution and sanitizers.

NO TAKE-DOWN FOR CIP

Unique auto-manual actuator controls cleaning and sanitizing of seals without take-down of pump. May be manually or automatically controlled.

New TRI-CLOVER CIP CENTRIFUGAL PUMP

Cleaned and Sanitized—Automatically—while running

Here's a new sanitary centrifugal pump that combines top operational efficiency with a simple, self-cleaning concept.

The new Tri-Clover "CIP" incorporates features which make cleaning in place as easy and effortless as turning on a light-switch. A *one-piece* impeller and shaft; a fully developed volute-type head, and a *one-piece* internal seal are among the many important modifications which will make the new Tri-Clover "CIP" the *first choice* for efficient, economical and versatile sanitary pumping.

As with all Tri-Clover pumps, the new "CIP" Series Centrifugal incorporates only the highest quality materials and is manufactured to meet the most exacting requirements present in the industry. Traditional Tri-Clover craftsmanship is your assurance of years of efficient pumping service at the lowest possible operating costs.

WRITE FOR BULLETIN CIP-260.

IN CANADA: Brantford, Ontario
EXPORT DEPT.: 8 S. Michigan Ave., Chicago 3, Ill., Cable TRICLO, CHICAGO, U.S.A.

TRI-CLOVER

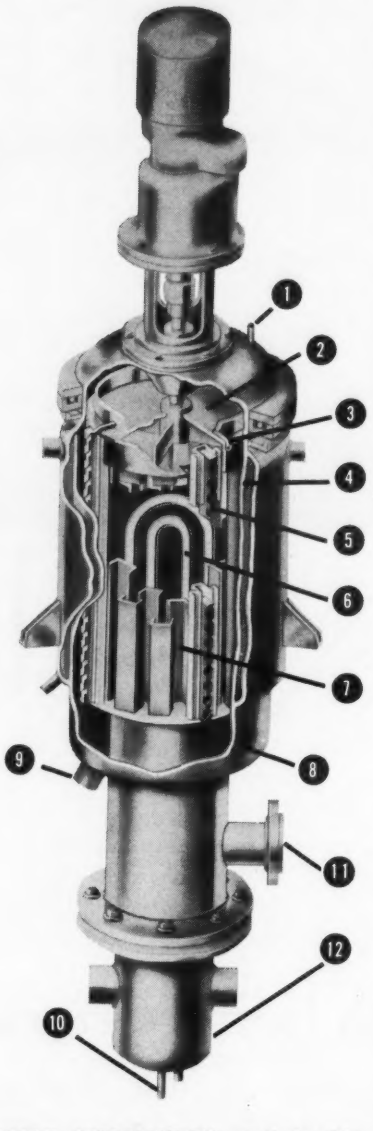
P261

LADISH CO.
Tri-Clover Division
Kenosha Wisconsin

7213 on Reader Service Slip.

FLUIDICS* AT WORK

How a wiped film evaporator *concentrates tomato, honey, syrup, fruit juices and other foods*



This is the Pfaudler® Wiped Film Evaporator. It offers the food industry an efficient method for concentrating heat-sensitive or highly viscous materials in production quantities. With tomato, for example, you can concentrate up to 50% solids by weight.

HOW IT OPERATES: Product passes through feed inlet (1) onto the distributor plate (2) and then through four evenly spaced nozzles (3) onto the internal heated wall of the unit (4) just ahead of each wiper (5). The rotating wipers distribute the product in a thin uniform film over the evaporator wall, permitting efficient vaporization of the low-boiling constituents. Vaporized material passes through entrainment separators (7) and condenses on center "U" bundle (6). Distillate flows out drain (10) at bottom of unit. When vaporizing water only, internal condenser (6) and bonnet assembly (12) are omitted. Vapors then exhaust through nozzle (11) to an external condenser or directly to a steam ejector. The concentrate continues down the wall into collector (8) and flows out outlet (9). Entrained droplets flow down and off the separator channels into concentrate collector.

MORE INFORMATION: Bulletin 991 gives complete "specs" and operating characteristics. Ask for it. Or inquire about testing your product at our Test Center. Write to: Pfaudler Division, Dept. FP-81, Rochester 3, N. Y. In Canada, contact Pfaudler Permutit Canada Ltd., Toronto.

*FLUIDICS is the Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

PFAUDLER PERMUTIT INC.

Specialists in FLUIDICS . . . the science of fluid processes

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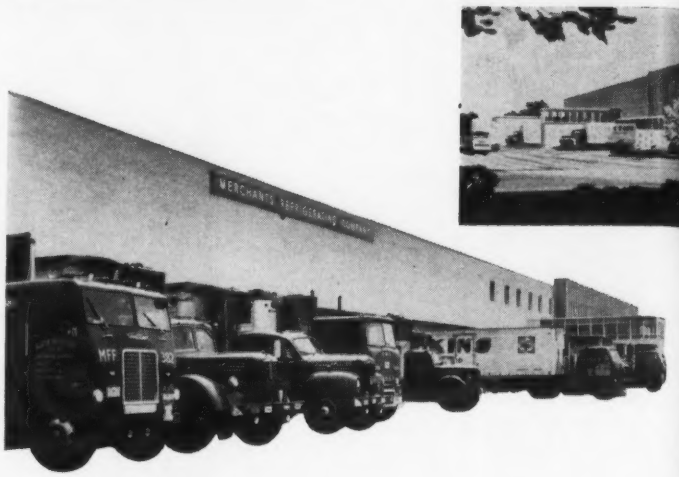
plants companies personalities

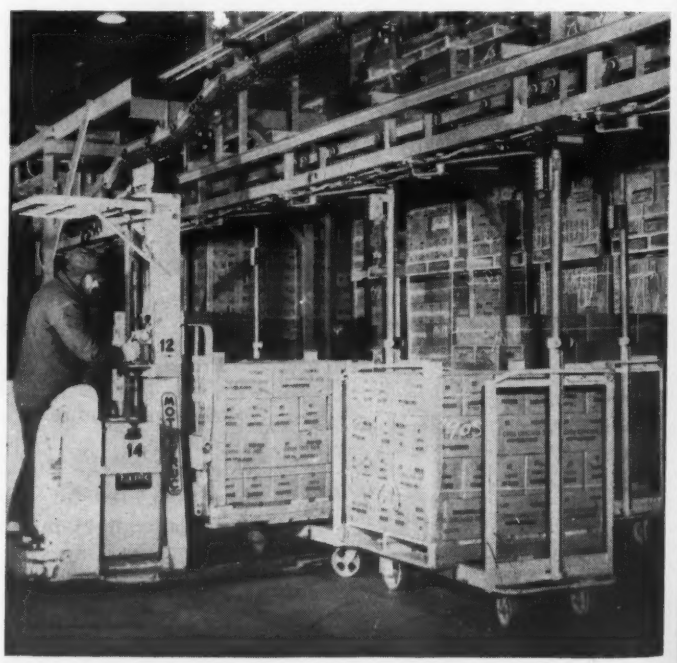


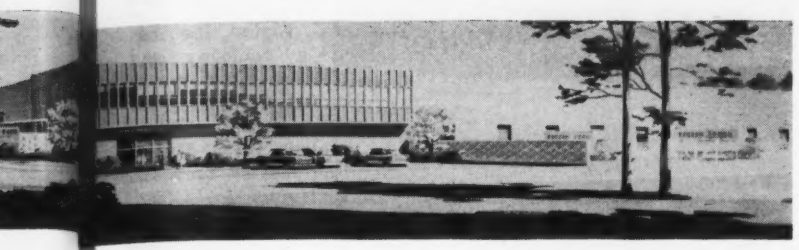
Just a stone's throw out of New York, 'Frozen Food City' offers new concept of . . .

Integrated processing, warehousing,

TWENTY MINUTES from the heart of Manhattan, in Secaucus, N.J., an ultra-modern 3,100,000-cu-ft processing, warehousing and distribution center — called "Frozen Food City" — officially began operations in mid-June.

Located in the New Jersey meadows, where space is relatively plentiful, and yet practically in the big city's lap, the new Merchants Refrigerating Company facility





Forty-one truck-delivery doors help speed up operations, all under direction of the control tower (extreme right in photo, and at left in architect's drawing)

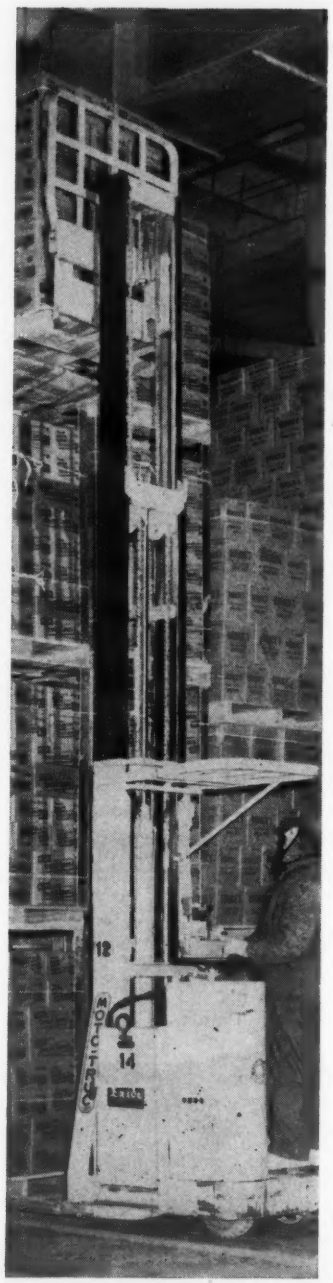
High-stacking lift truck places palletized product in assigned storage position. Stacks can go as high as 22 ft in huge freezer room maintained at —10 F

distribution

provides cost-saving advantages deriving from its unique location.

Major transportation costs of finished food products are eliminated, and distribution to retail outlets in the huge New York Metropolitan market greatly simplified. Moreover, frozen product handling is under the strictest degree of control.

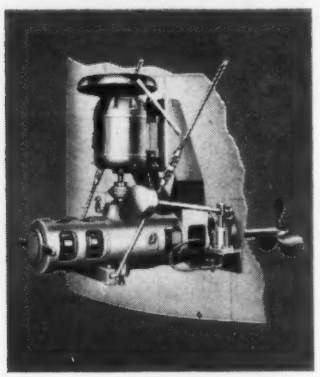
First frozen food processor to take advantage of the opportunity to locate at Frozen Food City is Chock Full O'Nuts Corp., whose new processing plant now is under construction. END



Automatic towline delivers cartloads of frozen foods to predetermined storage stations, where they are unloaded and stacked

NEW

for mixing



Beginning today, all other side-entering mixers are out of date.

The LIGHTNIN Mixer you see here is a 50-horsepower Hi-Flo unit. It does the work of *three* 25-hp mixers on a big blending tank. It saves you

- one-half the purchase price of three 25-hp mixers
- almost two-thirds the installation cost
- and one-third of the operating cost.

You can now get LIGHTNIN Mixers like it in a *full range of sizes up to 50 hp*. This new line provides 50% more flow per horsepower than any other side-entering mixer. It is called LIGHTNIN Series NSE.

At every size level, these units equipped with new Super-Pitch propellers provide extra pumping capacity. Capacity that translates into faster mixing or mixing at lower installed cost.

For information, call your LIGHTNIN Mixer representative now. He's listed in the yellow pages of your telephone directory. Or write, wire, phone us direct for Bulletin B-526.

Lightnin® Mixers

MIXCO fluid mixing specialists

MIXING EQUIPMENT CO., Inc., 132-h **Mt. Read Blvd., Rochester 3, N.Y.**

In Canada: Greey Mixing Equipment Ltd., 100 Miranda Avenue, Toronto 19, Ont.
In Europe: Lightnin Mixers Ltd., Poynton, Cheshire, England

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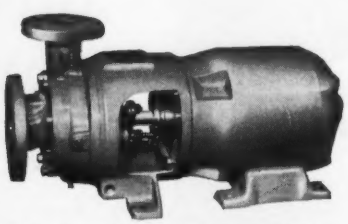
when you discuss pumps

what does **GPM** mean to you?



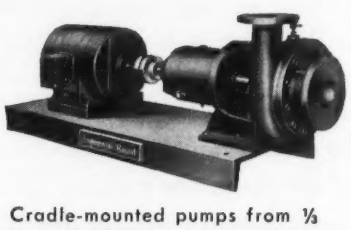
Close-coupled Motorpumps from ¼ through 75 horsepower. 1, 2 and 4-stage models available as well as self-priming types.

THE TECHNICAL DEFINITION

GPM stands for GALLONS PER MINUTE and is the term used in all calculations having to do with the measurement of the flow of liquids.

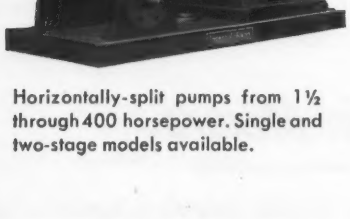
BUT THERE'S ANOTHER MEANING TOO

Our other meaning of GPM is GOOD PRODUCTION METHODS. This is the reason why our pumps are able to give you the performance that our designers forecast...greater capacity delivered per kilowatt of power input as well as dependable and longer trouble-free pump life.



Cradle-mounted pumps from ⅓ through 100 horsepower. Single and two-stage models available as well as self-priming types.

When you're in the market for a centrifugal pump we are sure you want the best available...The best design, the best efficiency and the best built...one from Ingersoll-Rand. Our commercial pump line is complete with units ranging to 4000 gallons per minute capacity and heads to 1100 feet. Our trained pump specialists are always ready to help you. Call the nearest Ingersoll-Rand branch office or see our authorized pump distributor. There's no pumping problem too tough to handle.



Horizontally-split pumps from 1½ through 400 horsepower. Single and two-stage models available.

Ingersoll-Rand

250A9 11 Broadway, New York 4, N.Y.

OTHER PUMPS TO 200,000 GPM—PRESSURES TO 6500 PSIG.

7216 on Reader Service Slip.

plants companies personalities

Thomas J. Lipton, Inc., has purchased a company and added three scientists to its expanded research and development organization. Purchase involves **Good Humor Corporation** of New York and the Good Humor Ice Cream Companies of Baltimore and Washington, D.C. The scientists are: **Dr. Remo Franceschini,** formerly with Libby, McNeill & Libby, to group leader in the product development section; **Leonard L. Ciaccio,** formerly with Pfizer, to work in food research and product standards specifications; **Harold E. Swartz,** formerly with Johnson & Johnson, to microbiological work, with particular emphasis on study of fungi.

Falstaff Brewing Corp., St. Louis, has acquired for cash the malting and other physical properties of **Albert Schwill and Co.,** South Chicago. The malting plant, now designated as Falstaff's plant eleven, malting division, will operate under supervision of Harvey Beffa, Jr., Falstaff vice president, malting division. Lloyd Forsell, former Schwill plant manager, will be general manager of the plant.

association news

Two major September symposiums

"Oxidative Deterioration of Food Lipids" — a major problem in processing and storing food — will be the theme of Oregon State University's second biennial "Symposium on Foods," Sept. 11-13.

Chairmaned by Dr. Harold W. Schultz, head of the University's Department of Food and Dairy Technology, the symposium will bring together leading U.S. and foreign au-

continued on p. 28

North American Laboratory Co., Inc.

Indianapolis, announces appointment of Dr. Hormoz-Broumand, formerly director of research for Stark-Wetzel & Co., Inc., as vice president in charge of research development and production.

R. T. French Co.

Rochester, has promoted vice president Franklin J. Enos to the newly created position of senior vice president. Technical director Dr. John M. Fogelberg has been elected vice president.

Kraft Foods

division of National Dairy Products, has named Gordon Edwards executive vice president.

Chas. Pfizer & Co., Inc.

has acquired via stock transaction Paul-Lewis Laboratories, Inc., Milwaukee firm specializing in enzyme production, research and technology. Paul Halmbacher will remain as president of the new Pfizer subsidiary.

Alta Vineyards Company

Fresno, Calif., has acquired the vineyards, winery and business of Garrett & Co., Guasti, Calif., including Garrett's well-known Virginia Dare, Garrett's and I.V.C. brands. Garrett & Company is retiring from the wine business in order to capitalize on appreciated value of the company's real estate holdings.

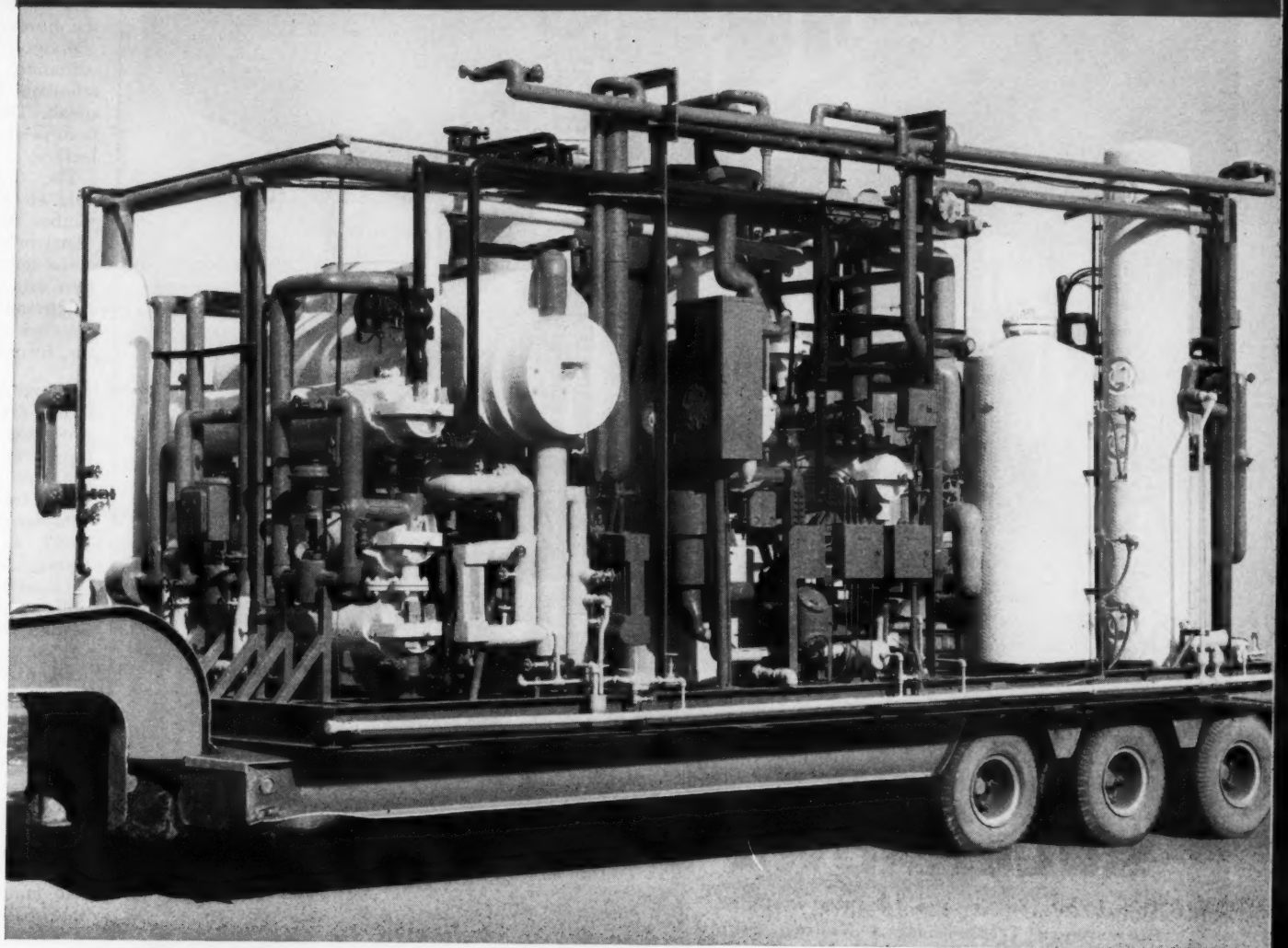
General Foods Corp.

has appointed Ross Barzelay operations manager for Kankakee Operations (corn mill products).

For more information on product at right, circle 7217 see information request blank opposite last page.

good news for steam-iron hydrogen plant operators !

If your spathic iron ore supplies are low, and new supplies are not available, switch now to the Girdler Hygirtol® package process for unlimited, low-cost hydrogen production.



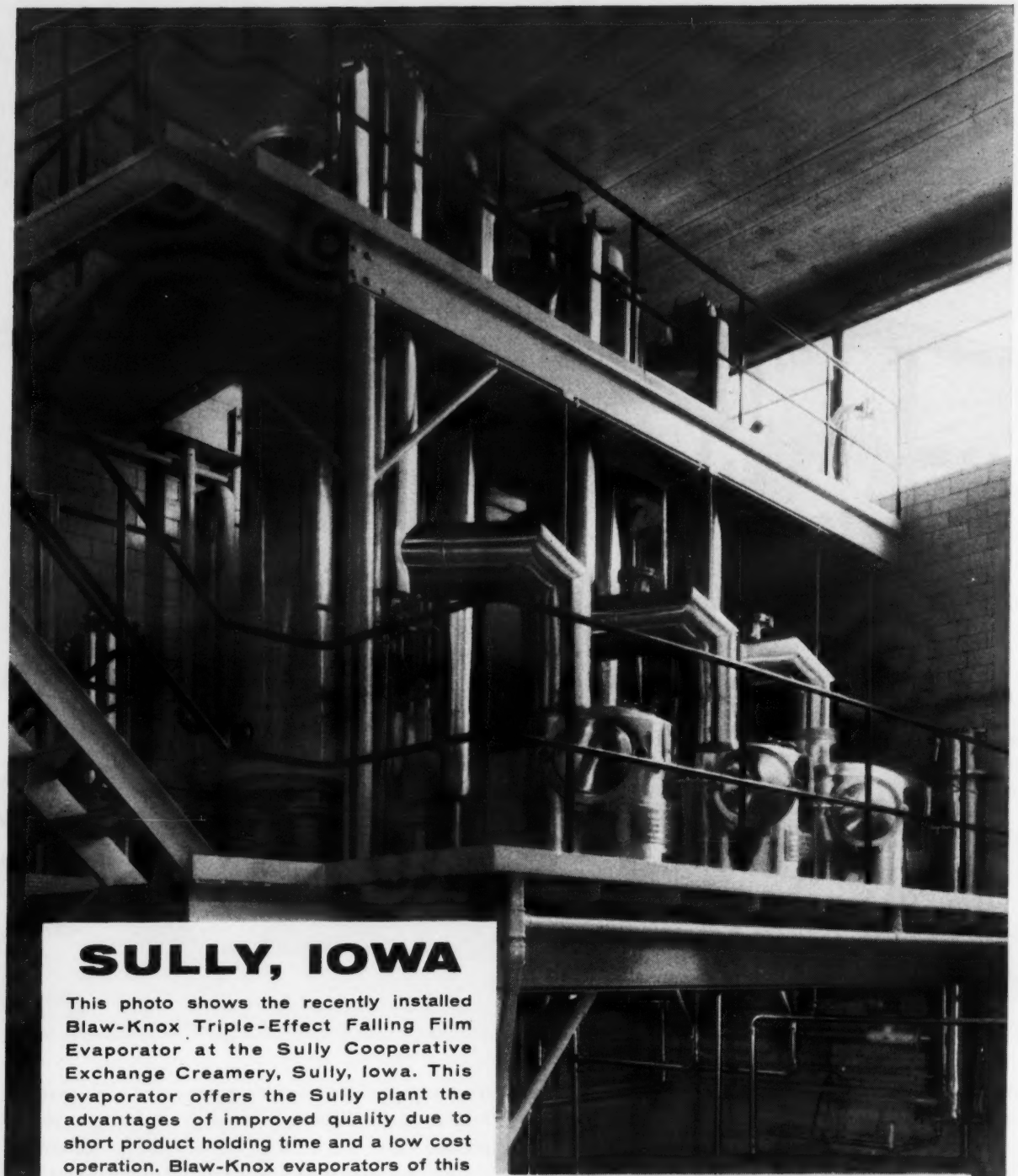
Use the Girdler Hygirtol package hydrogen plant with your present reformer, or a new Girdler reformer. The Hygirtol plant manufactures optimum purity hydrogen from hydrocarbons and steam in one continuous process . . . hydrogen of such quality that it is used by nearly every major edible oil processor in the country. Your new Hygirtol Plant installation will pay for itself with the money you save in operation. Package plants available to fit every requirement, up to 600,000 C.F.D. For a complete description of the Girdler process for high purity hydrogen production, write for comprehensive bulletins which include complete descriptive data and flow-sheets.

GIRDLER

CORPORATION ■ LOUISVILLE 1, KY.

SUBSIDIARY OF THE CHEMICAL & INDUSTRIAL CORP.

Designers and constructors of plants for the production of: Hydrogen ■ Carbon Monoxide ■ Carbon Dioxide ■ Ammonium Nitrate ■ Hydrogen Sulfide ■ Ammonia ■ Synthesis Gases ■ Hydrogen Chloride ■ Anhydrous Hydrogen Chloride ■ Formaldehyde ■ Girbatol Gas Purification ■ Sulfur Recovery ■ Urea



SULLY, IOWA

This photo shows the recently installed Blaw-Knox Triple-Effect Falling Film Evaporator at the Sully Cooperative Exchange Creamery, Sully, Iowa. This evaporator offers the Sully plant the advantages of improved quality due to short product holding time and a low cost operation. Blaw-Knox evaporators of this type make possible the phenomenal operational savings of up to 5.2 lb. of evaporation per pound of steam.

Write for Bulletin No. 587.

BLAW-KNOX
Dairy Equipment
MORA, MINNESOTA

BLAW-KNOX

Blaw-Knox designs and manufactures for America's growth industries: METALS: Rolling Mills • Steel Processing Lines • Rolls • Castings • Open Hearth Specialties • PROCESSING: Process Design, Engineering and Plant Construction Services • Process Equipment and Pressure Piping • CONSTRUCTION: Concrete and Bituminous Paving Machines • Concrete Batching Plants and Forms • Gratings • AEROSPACE: Fixed and Steerable Antennas • Radio Telescopes • Towers and Special Structures • POWER: Power Plant Specialties and Valves

7218 on Reader Service Slip.

association news

continued from p. 26

thorities for discussions on the undesirable chemical reactions occurring in man's food supply, and their implications for the human diet.

Sixteen experts on lipid oxidation — including two scientists from abroad — will speak. Discussion and question periods will follow each lecture.

The first food symposium, held at Oregon State in September 1959 and devoted to "Enzymes," was attended by more than 200 food scientists from throughout the nation. Additional symposiums are planned for every-other-yr in the future.

"Flexible packaging for freeze-dried and thermally processed foods" will be critiqued at this fall's Military-Industry Conference, sponsored by Research and Development Associates, Sept. 26-27, at Chicago's La Salle Hotel.

In addition, the Conference will up-date technical information on freeze-drying — subject of last fall's extremely well-attended meeting.

Among the presentations will be a discussion by Dr. Arnold J. Lehman, director, Division of Pharmacology, Bureau of Biological and Physical Sciences, Food & Drug Administration, of factors involved in establishing safety of packaging techniques and materials for dehydrated, thermally processed and irradiated foods.

Other speakers will include top uniformed and civilian representatives of the Military, and such industry speakers as: Dr. Bruce Morgan of Continental Can; John A. Abbott of FMC Corp.; Harry Lee, Jr., of Reynolds Metals; William Boston of Bartelt Engineering Co. and Dr. John Nair, food industry consultant.

Requests for the complete program and registration information should be addressed to Lt. Col. Harlan J. Wills, AUS-Ret., executive secretary, Research and Development Associates, 1819 W. Pershing Rd., Chicago 9, Ill.

More Association News on p. 115

THE MAGAZINE OF APPLIED TECHNOLOGY
FOR MEN WHO MANAGE
FOOD PROCESSING
AUGUST 1961
VOL. 22 NO. 8

The Consumer Counsel Movement

Problems of consumers are already the concern of many government agencies — such as FDA, USDA, USPHS, FTC, and SEC on the national scene, plus their counterparts at the state and city level. But it is argued that the *viewpoint* of the consumers often gets lost in the working out of solutions among various pressure groups not representative of consumers.

Those who argue in this fashion are becoming increasingly vocal in their efforts to set up separate Offices of Consumer Counsels with the objective of protecting the buying public.

California has had such an office since 1959. The state of New York had an Office of Consumer Counsel under Former Governor Harriman. President Kennedy's New Frontier includes plans for a Consumer Counsel on the White House staff. This office would be given cabinet rank and established as a Department of Consumers by a proposal of Senator Kefauver and sixteen of his Senate colleagues.

These consumer counsels concern themselves with matters which directly affect the food industry such as the use of chemicals in the growing, processing and formulation of foods, labeling of foods, and determination of short weight. This latter subject is discussed at length by Karl Robe, our Associate Editor on the West Coast, who has been closely following developments in California's Office of Consumer Counsel.

Other articles will appear in future issues not only to keep our readers informed of important developments in this area but also to suggest what can be done to keep the consumer movement from becoming a backward force.

HOWARD P. MILLEVILLE
EDITOR

Consumer counseling . . . Will it become a bailiwick of faddist opinion?

- **Now is the time to study the concentration of power behind a growing trend — an appointed "consumer representative"**
- **In this case history, a methodology which actually benefits the consumer is attacked as "a legal system for short-weighing the consumer"**
- **What are the implications? What can we do?**

KARL ROBE, Associate Editor

IN CALIFORNIA, the scientific approach to package-weight enforcement may be acquiring a corrupt connotation in the minds of the lay public. Particularly ironic is the fact that in the California application of statistical quality control, consumers receive more positive, more efficient, and more complete protection than before.

Nevertheless, they have been informed through the California Office of Consumer Counsel that they as consumers oppose the use of SQC (Statistical Quality Control) sampling methods by County Sealers to ferret out short-weight packages as set forth in the new code.

In this new code, Article 5, (see next page) which went into effect last January 29, the California Department of Weights and Measures set up a uniform procedure for its inspectors to follow in checking weights. (In line with Federal Regulations — see section on Minimum vs Average Net Weight on next page — which are followed by nearly all the states in their official regulations, the code considers that the label weight expresses the average weight of a lot or shipment.)

The consumers of California have been introduced to this statistical sampling technique in these terms in newspaper stories: continued next page

To be forewarned is to be forearmed. The subject of minimum vs average net weight, inherent in the Office of Consumer Counsel's opposition to the California Weight Code, will rise again.

For instance, the minimum weight concept has the blessing of the Calif. Grange and the Calif. Federation of Labor, to name two consumer groups who favor it.

Minimum vs. average net weight

Average net weight concept is the accepted basis for package weight control (See Legal Aspects below). It recognizes normal variations of process variables. If 1000 packages are each marked 1 lb net weight, then the net weight of food in the lot will be 1000 lb or over. Range of weights between individual packages will conform to good commercial practice.

In actual practice, manufacturers fill somewhat more than 1000 lb into 1000 packages, to make sure that average net weight is maintained day after day.

Minimum net weight concept as conceived by the above groups means that *no* individual package shall be sold that is below the declared weight — regardless of the average weight of lot.

To comply with a minimum weight requirement, packers would have to raise the actual fill weights substantially above the declared net weight.

The minimum weight concept would raise the price of packaged foods by as much as 3c to 7c per 10-oz package of some frozen foods on which records have been studied by technical committees on SQC.

On the other hand, the average net weight concept favors the consumer. It means that he gets his preweighed foods at minimum cost for weighing them, and receives more food value for his money.

Legal Aspects: Practically all of the state regulations are in accord with Federal FDA regulations, which are as follows: If the label amount is stated in terms of a minimum measure or count, then no deviation below such stated amount is permissible; in the absence of such a statement, the label amount shall be considered to express an average quantity.

Thus, the Federal Food, Drug and Cosmetic Law reads as follows: Sec 403 (k-2) . . . variations from the stated weight, measures, or numerical count shall be permitted when caused by unavoidable deviations in weighing, measuring, or counting individual packages which occur in good packing practice . . . but variations shall not be permitted to such extent that the average of the quantities in the packages comprising a shipment or other delivery of the food is below the quantity stated, and no unreasonable shortage in any package shall be permitted, even though other packages in the same shipment or delivery compensate for such shortages.

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This type of reasoning seems straightforward. Unfortunately, it was not acceptable to the California Office of Consumer Counsel, as the quotations eloquently demonstrate.

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Let it be clear that in the above case history illustration, we do not object to *informed, objective opposition* to any subject, nor to the idea of consumer representation.

What we can do

The trend toward consumer counsels at the political level is growing. If this trend continues to reflect a partial grasp of basic modern technologies and economies, then the food industry is in for rough times at the hands of legislators, newswriters and consumers. And the consumer can expect to become more confused.

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Don Vial of the California Labor Federation said the complex, 14-page proposal "is pretty well camouflaging a built-in flexible tolerance."

Industry spokesmen denied that the system provides any tolerances from stated weights. They said it merely sets up a scientific method for determining and allowing variations.

"Nothing has ever been

Harry N. Coulden, quality control manager for Safeway Stores.

"We have what we call the three Ma[illegible] variations—vari-

Mrs. Nelson Fights Food Package Deal

SACRAMENTO, Dec. 16 (AP) — California's new consumer counsel urged the State today to make certain that shoppers get the amount they pay for when buying frozen foods and packaged meats.

Helen Nelson, making her first appearance for State consumers since appointment to the post in October, strongly protested a plan to allow processors leeway in reaching weights marked on certain food packages.

She had strong backing,

the California Labor Federation and the State Grange, at an Agriculture Department hearing.

Several food processors spoke up for the proposal to allow a weight deficiency of one ounce for every two pounds or fraction of two pounds for frozen food, and a half-ounce for packaged frankfurters.

They argued that shrinkage is unavoidable between packaging and sale.

In allowing a deficiency of one ounce in the standard

California's article 5

California's new code sets up a uniform procedure based on the methods of Statistical Quality Control for determining the average weight of lots of packaged items by taking samples. No knowledge of SQC is required on the part of the inspector.

It guides the inspectors in (1) determining the number of packages to be taken for a sample; (2) determining their tare weights; (3) rejecting any package in the sample because it represents an unreasonable error in filling and would unduly distort the average weight computed for the sample.

If the first sampling meets weight requirements, the inspector has 95% assurance that the entire lot is satisfactory. He may then assume if he so desires that the entire lot is satisfactory in order to spend his time more profitably checking other lots. Obviously this would be the case if the first sampling was definitely overweight. If the first sampling was a hairline deviation from the required weight, the inspector has to judge whether it will be worth his time to continue sampling. A table in the code helps him make this decision.

If the first sample average is underweight, then the inspector takes more samples in accordance with the procedures outlined in the Code to secure an average which will represent the lot with 99.9% assurance, which is regarded as acceptable in courts as the equivalent of total sampling — the checkweighing of each package in the lot.

A copy of the code may be had by writing to California Bureau of Weights and Measures, Sacramento, California and requesting: Article 5 — Sampling and Testing Procedures for Estimating Container Fill of Packaged Commodities. A commentary on its use and significance is available from National Canners Association, 1133 20th St., N.W., Washington, D.C., or 1950 Sixth St., Berkeley, Calif. Ask for 60B-M4-2.

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Helen Nelson, State consumer counsel, told an Agriculture Department hearing board the regulations would provide a legal system for short-weighting packages and cheating consumers.

Don Vial of the California Labor Federation said the complex, 14-page proposal "is pretty well camouflaging a built-in flexible tolerance."

Industry spokesmen denied that the system provides any tolerances from stated weights. They said it merely sets up a scientific method for determining and allowing variations.

"Nothing has ever been

Harry N. Couden, quality control manager for Safeway Stores.

"We have what we call the three Ma... variations... variations in... men... mate... Pr... no... lat... we... be... By... ur... t...

Mrs. Nelson Fights Food Package Deal

SACRAMENTO, Dec. 16 (AP) — California's new consumer counsel urged the State today to make certain that shoppers get the amount they pay for when buying frozen foods and packaged meats.

Helen Nelson, making her first appearance for State consumers since appointment to the post in October, strongly protested a plan to allow processors leeway in reaching weights marked on certain food packages.

She had strong backing,

the California Labor Federation and the State Grange, at an Agriculture Department hearing.

Several food processors spoke up for the proposal to allow a weight deficiency of one ounce for every two pounds or fraction of two pounds for frozen food, and a half-ounce for packaged frankfurters.

They argued that shrinkage is unavoidable between packaging and sale.

In allowing a deficiency of one ounce in the standard

California's article 5

California's new code sets up a uniform procedure based on the methods of Statistical Quality Control for determining the average weight of lots of packaged items by taking samples. No knowledge of SQC is required on the part of the inspector.

It guides the inspectors in (1) determining the number of packages to be taken for a sample; (2) determining their tare weights; (3) rejecting any package in the sample because it represents an unreasonable error in filling and would unduly distort the average weight computed for the sample.

If the first sampling meets weight requirements, the inspector has 95% assurance that the entire lot is satisfactory. He may then assume if he so desires that the entire lot is satisfactory in order to spend his time more profitably checking other lots. Obviously this would be the case if the first sampling was definitely overweight. If the first sampling was a hairline deviation from the required weight, the inspector has to judge whether it will be worth his time to continue sampling. A table in the code helps him make this decision.

If the first sample average is underweight, then the inspector takes more samples in accordance with the procedures outlined in the Code to secure an average which will represent the lot with 99.9% assurance, which is regarded as acceptable in courts as the equivalent of total sampling — the checkweighing of each package in the lot.

A copy of the code may be had by writing to California Bureau of Weights and Measures, Sacramento, California and requesting: Article 5 — Sampling and Testing Procedures for Estimating Container Fill of Packaged Commodities. A commentary on its use and significance is available from National Canners Association, 1133 20th St., N.W., Washington, D.C., or 1950 Sixth St., Berkeley, Calif. Ask for 60B-M4-2.

NEW TECHNOLOGY--

the dramatic factor in manpower output growth

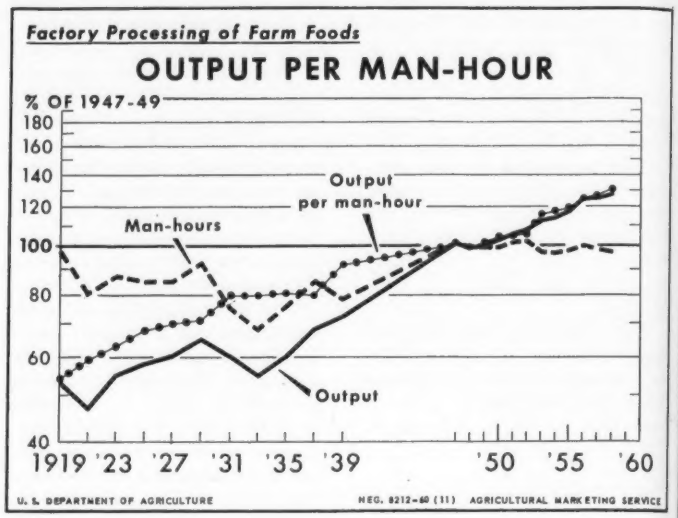


Table 1 — **Stock of total capital in food and kindred products (excluding beverages) manufactures, United States, selected years, 1919-57** 1929 = 100

Year	Total capital[1]	Total capital per Employee[3]	Man-hour[4]	Unit of output[5]
1919	78	76	76	95
1929	100	100	100	100
1937	86	77	93	83
1948	91	68	85	57
1953	102	77	98	56
1957	120	88	113	60

Table 2 — **Stock of fixed capital in food and kindred products (excluding beverages) manufactures, United States, selected years, 1929-57** 1929 = 100

Year	Fixed capital[2]	Fixed capital per Employee[3]	Man-hour[4]	Unit of output[5]
1929	100	100	100	100
1937	73	66	79	70
1948	81	61	75	50
1953	79	60	76	44
1957	79	58	74	39

[1]Includes fixed capital (land, buildings, machinery, and equipment) and working capital (cash, inventories, and accounts receivable). Data made available by Dr. Daniel Creamer: 1919, 1929, 1937, and 1948 from "Capital in Manufacturing and Mining: Its Formation and Financing," by Creamer, Dobrovolsky, and Borenstein; 1953 and 1957 from "Study in Business Economics," National Industrial Conference Board.

[2]Includes land, buildings, machinery, and equipment shown in the balance sheet of food manufacturing corporations; excludes fixed capital which is leased or rented from other sectors of the economy. Judging from Internal Revenue data, there was no significant trend in the use of rented capital in food manufacturing. Statistics obtained from Dr. Creamer; see footnote 1.

[3]Index based on number of all employees in food and kindred products (excluding beverages) manufactures reported in Census of Manufactures and in Annual Survey of Manufactures.

[4]Based on estimate of man-hours worked by all employees.

[5]Based on approximate net output index for food and kindred products (excluding beverages) manufactures employing same method used to compute index of factory production of domestic farm food products for years between 1919 and 1948. For years after 1948, the Industrial Production Index for Food Products (Food and kindred products, excluding beverages) compiled by the Federal Reserve Board was used.

WILLIAM H. WALDORF, Economist
Agricultural Marketing Service, USDA*

NEW TECHNOLOGY is probably the most dramatic factor contributing to the growth per man-hour in factory processing of farm food products, particularly since World War II.

As shown in Fig. 1,** output per man-hour increased at an average annual rate of 2.7 per cent. Rates among various food industry groups differed widely from a high of 4.6 per cent per year for fruits and vegetables packers to a low of 1.4 per cent per year for bakeries as shown in Fig. 2.

The postwar increase in output per man-hour in food manufacturing was accompanied by a substitution of total capital (fixed plus working capital) for labor. However, the increase in the stock of total capital per man-hour was apparently confined to working capital — see Tables 1, 2.

The increase of working capital relative to labor contributed to the rise in output per man-hour in the postwar period; however, the leveling off of fixed capital per man-hour indicates that, at least since 1929, the rise in output per man-hour in food manufacturing resulted mainly from other factors such as new technology, a more skilled labor force, economies of scale, and other factors.

A brief industry survey of major developments suggests that technological changes in food manufacturing during the last three decades were both labor saving and fixed-capital saving. Between 1953 and 1957, firms engaged in

*A condensation from his Technical Bulletin No. 1243, "Output Per Man-Hour in Factories Processing Farm Food Products," (42 pages), May 1961.

**Figures do not include fluid milk, cream or eggs because adequate employment data for these plants are not available.

manufacturing food and kindred products substantially increased their outlays for research and development. These outlays are largely for development of new food products, some of which contributed to the increase in output per man-hour.

A Department of Agriculture survey of technology in marketing of food products lists major technological developments in commercial processing between 1930 and 1950 — developments in materials handling, continuous processes, packaging, grading, sanitation, and others. In materials handling the trend has been toward bulk handling. This includes the introduction of hydro-conveying, pneumatic conveying, and the extension of the dump truck principle to grains and other products. The adoption of bulk handling probably has been largely labor saving.

The development and adoption of continuous processes replaced much of the old-fashioned discontinuous batch and vat methods. These continuous processes also gave impetus to development of techniques for short-time sterilization at high temperatures, packaging equipment, and other innovations. Introduction of electronic temperature and humidity controls have also enlarged the usefulness of electric control systems. Technological changes associated with continuous processes suggest the importance of capital-saving innovations as well as labor-saving innovations in food processing.

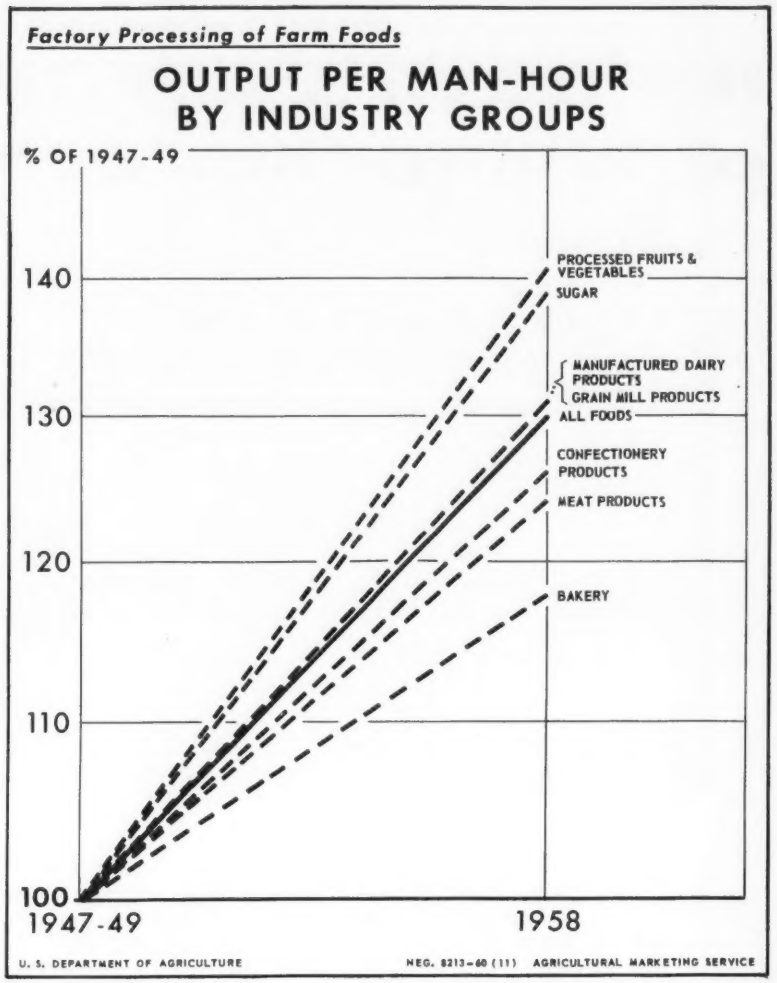
Growth in kilowatt hours of electric power used also suggests the importance of new technology in increasing output per man-hour in food manufacturing. During the postwar period 1948-57, the stock of fixed capital remained unchanged and the number of man-hours worked declined slightly whereas the number of kilowatt hours consumed in food manufacturing rose about 50 per cent. This rise in electric power consumed reflects increases in air-conditioning, lighting, and other electric appliances; however, in addition, it also reflects the employment of more electric power-driven equipment in bulk handling, continuous production processes, and other technological changes in production.

Research and Development

The National Science Foundation has sponsored several sample surveys during the postwar years which estimate employment and outlays for research and development by United States industries. According to these reports, the estimated cost of research and development within the food and kindred products industries in 1956 was $75.9 million, about 40 per cent greater than in 1953. These industries employ 15,400 engineers, chemists, and other natural scientists as of January 1957.***

These figures on costs and employment within food manufacturing industries are largely for research and development of new products. New products often contribute to increased output per man-hour. In production of prepared and blended flour mixes, for example, output per man-hour is much greater than in white flour milling, and in the postwar period output of prepared flour increased much faster than white flour production. Similarly, the dramatic growth of frozen foods contributed to the substantial postwar rise in output per man-hour in the processed fruits and vegetables industry group.

At any rate, *the figure for food and kindred products manufactures substantially understates total outlays for research and development* related to food manufactures; it excludes research and development related to food processing undertaken by the chemical and food machinery industries, universities, Government agencies, and other groups. END



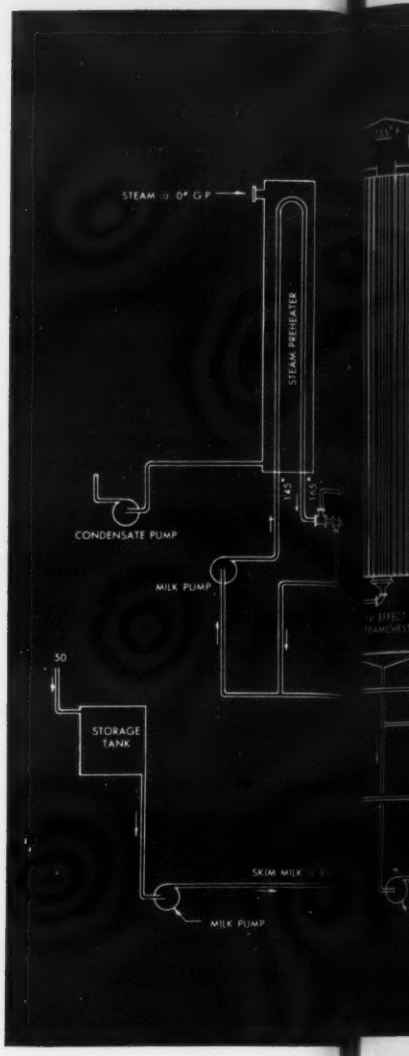
***Editor's Note: For 1959, the National Science Foundation figure for research and development in food and kindred products industries is $92,000,000. For 1960, it has been estimated as between $100,000,000 and $110,000,000.

Elsewhere, the author states that research and development costs account for about 0.5 per cent of value added, and that the total number of physical scientists accounted for about 1 per cent of all employees or nearly 3 per cent of non-production workers.

IMPROVE PERFORMANCE of falling-film evaporator

- **Process highly viscous product**
- **Less than 2 minute throughput time**
- **5 to 1 steam economy in a triple effect system**

RONALD E. MAYER
Design Engineer
Blaw Knox, Dairy Equipment Division
HOWARD P. MILLEVILLE
Editor



THERE IS A LIMITING and often critical factor in the design and operation of a falling film or downflow evaporator, widely used in vacuum evaporation of heat-sensitive products. This factor is the problem of obtaining uniform distribution of the liquid to each tube in the heat exchanger (steam chest or calandria).

These tubes are grouped together vertically in a bank or nest. It is essential that each tube not only receive the same amount of liquid, but that the liquid be distributed uniformly around the perimeter of each tube.

If the distribution is irregular, the performance will be substandard and excess heating of part of the product and even burn-on may occur.

As the liquid becomes more viscous, this requirement of uniform distribution becomes more and more difficult to obtain with the conventional means — usually some sort of circular dam or weir on the tube header around the opening of each tube.

Slight flash vaporization of the liquid to the tube bank is an effective way of overcoming this problem . . . and a relatively simple way. The flashing results in an enormous increase in volume.

Thus, a 1% flash vaporization to 120 F (26.5 in. Hg vacuum) results in a volume increase of over 125 (saturated vapor); at 95 F the volume increase is over 250 fold.

Uniform distribution of the resulting vapor-liquid mixture into the tubes with the heavier entrained liquid droplets directed against the tube walls is accomplished with the aid of a plate with orifices separated a short distance from the top of the tube bank as indicated in the flow diagram.

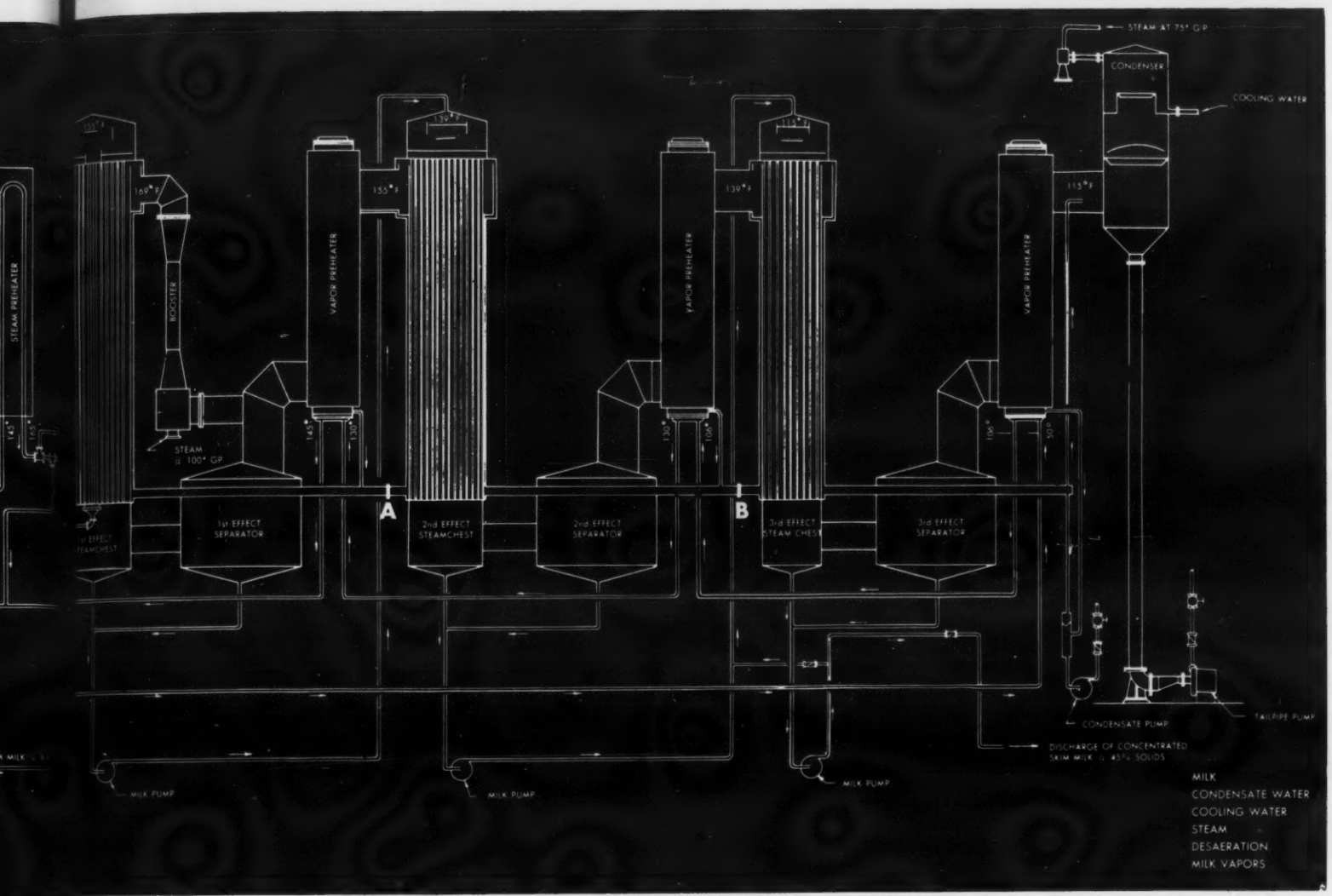
The degree of flashing which occurs and the detail design of the orifice place is confidential information. The design was originated by the J. & H. van der Ploeg Co., Apeldoorn, Holland.

The falling film evaporator described in this article is made under exclusive license (outside of Europe) by the Blaw Knox Dairy Equipment Division in Mora, Minn. This Division also installed the complete evaporator, spray dryer, and bagging system for production of dry skim milk powder
7219 on Reader Service Slip.

Now after some 50 installations are successfully operating in Europe, it has become available to US and Canadian processors. One of the first at Sully Cooperative Creamery Exchange, Sully, Iowa, went into operation in May. The accompanying photos and the cover photo were taken at this plant.

Milk concentration from 8.6% to 45% is achieved in the Sully system. This unit has a capacity for evaporating 11,000 lbs of water per hour from 13,600 lbs of feed. Other units are available with capacities from 8090 to 40,450 lbs evaporation per hour.

Steam consumption for



FLOW DIAGRAM for skim milk demonstrates effectiveness of evaporator design innovations. Forward feed is used in this application. In others, backward feed, and other modifications in the flow lines and use of preheaters may be made.

For skim milk the feed at 40 F (lower left) is pumped successively through preheaters and warmed to 105 F by the vapors from the 3rd effect, to 130 F by vapors from the 2nd effect, and to 145 F by vapors from the 1st effect. For stabilization it is finally heated to 165 F (or other temperature depending on characteristics desired in the product) in a steam preheater using steam at zero gauge pressure for heating.

After stabilization, the liquid feed enters the first effect through a centrally located tube bundle. Not only does the feed undergo flash vaporization with the temperature dropping from 165 to 155 F, but additional evaporation occurs through heat transfer through the walls of the tube bundle.

The feed already a vapor-liquid mixture enters the tubes of the falling film section of the first effect through the orifice plate just above the tube header, which results in uniform distribution of the mixture to the walls of the tubes.

The partially concentrated liquid from the first effect is pumped to the top of the calandria of the second effect where it flash-vaporizes (temperature drops from 155 to 139 F) to the header section of the calandria. In similar fashion the liquid feed to the third effect is flash vaporized with its temperature dropping from 139 to 115 F. (In some applications the temperature may be dropped to as low as 80 F.)

For each lb of steam input the first effect evaporates 3 lbs of water; the second effect 1 lb; and the third effect 1 lb.

The steam chests are connected to each other at the bottom and to the barometric leg condenser through a large diameter horizontal pipe. Automatic control of condensate flow is obtained by use of orifices serving as steam traps at points A and B. Note that on passing through the orifices, part of the condensate will flash-vaporize into steam, which additional steam effects additional evaporation of the product and increases heat economy.

The evaporation rate may be lowered to about 70% of capacity by throttling the steam inlet to the booster steam jet recompressor, but thermal efficiency is lowered.

Control of product concentration is easily accomplished manually through a micrometer adjustment on the throttling valve on the feed line to the first effect.

evaporation at Sully is 2240 lbs per hour at 100 psig; hence 1 lb of steam evaporates 4.96 lbs water. (In this installation, vacuum is obtained by a 2-stage steam jet which consumes an additional 224 lbs steam per hour at 75 psig.

Part of this exceptionally high heat economy is attributable to the use of a booster or vapor recompressor to raise temperature of about two-thirds the steam coming from the first effect (155 to 169F) and thus reuse this portion.

The high-heat economy is also due to the ingenious heat-saving arrangement of flows in the system as shown in the detail flow diagram and explained in the legend.

Electrical power for this installation amounts to 49 hp for 5 milk pumps, one condensate pump, and one tail pump.

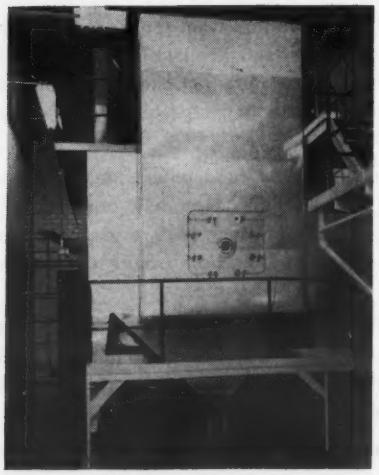
Cooling water to the condenser (barometric leg) amounts to about 50 gpm when temperature is 60 F. Small cooling water requirement is attributable to the counter-current arrangement of cold feed which cools and condenses part of the vapors from the third effect enroute to the condenser. At Sully a surface (shell and tube) type of condenser and cooling tower is used.

The Sully Co-op is quite proud of the product produced. Mr. Fred De Veria, Manager of the Co-op attributes the higher solubility of the milk powder produced from the evaporator-dryer system (see photos) to the lower retention time of less than 2 minutes in the evaporator.

Sanitary construction throughout and the simplified arrangement for obtaining uniform distribution to the tubes at the top of the calandrias makes cleaning by natural circulation quite effective.

Another feature of the construction of the heat exchangers is that they are not only insulated when fabricated with glass wool but the insulation is covered by a stain-

At left, falling film evaporator at Sully Cooperative Exchange Creamery; Below, horizontal spray dryer. Above, panel board from which operators control both evaporator and spray dryer. Three men operate the system; one for the evaporator, one for the spray dryer, and one for the bagging station (not shown)



less-steel jacket welded on to the flanges.

Other applications and the degree of concentration attainable are as follows: sweetened and condensed whole or skim milk, 74% SS; orange juice, 65% SS; grapefruit juice, 65% SS; centrifuged pineapple juice, 65% SS; grape juice, 55% SS; apple juice, 55% SS; apple pectin, 7% SS; whey, 60% SS; sweet buttermilk, 40% SS. (Information on other applications may be had by writing to the senior author.)

Modernization of existing evaporator system should be reconsidered, for it is possible to increase the capacity of say a double effect system 100% by the addition of one steam chest and separator — the design equivalent of the first effect shown in the diagram, which accounts for 3/5ths of the evaporation of the system shown in the flow diagram.

END

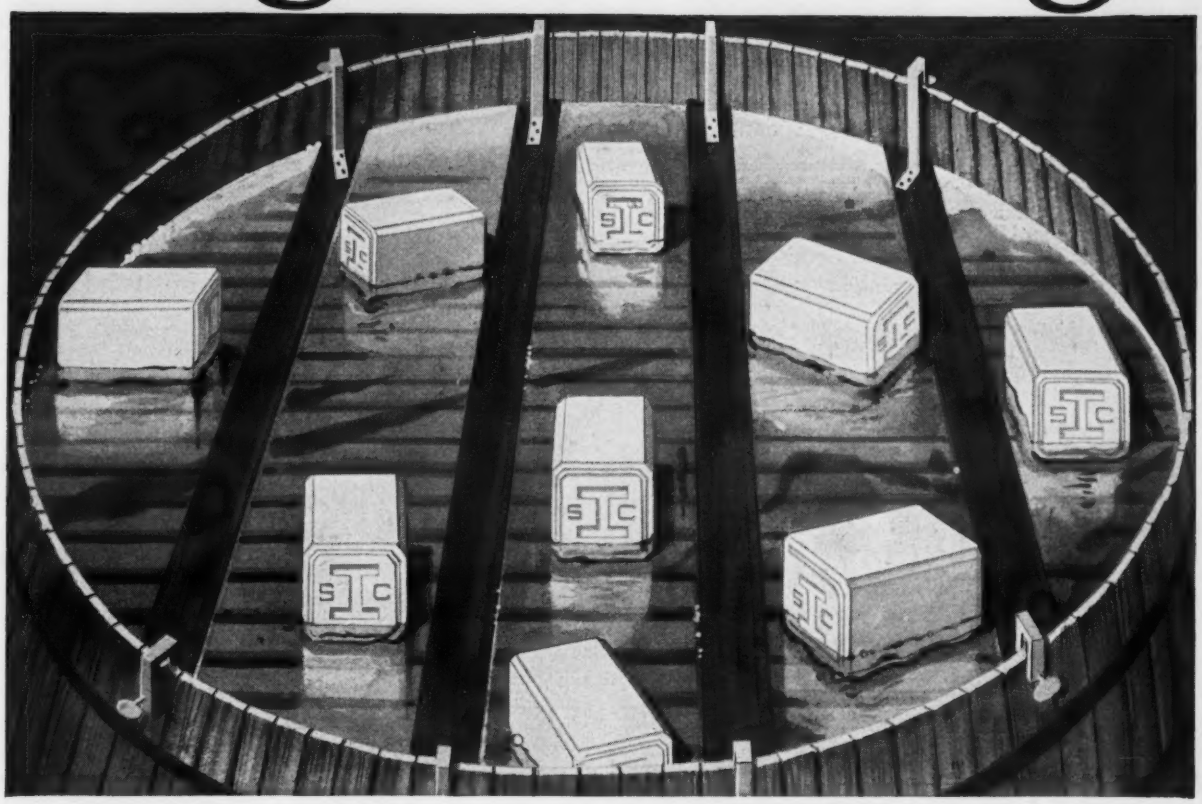
Seeds — subject of 1961 USDA Yearbook

Finding and developing better seeds is the oldest continuous service the Federal Government has rendered to the farmers, and is the subject of the 591 page, 1961 Yearbook of Agriculture. In addition to many drawings, the current yearbook contains a 48-page section of photographs; 128 specialists contributed to its 75 chapters.

To secure a copy, send $2.00 to the Supt. of Documents, USDA, Washington 25, D. C.

"Stop arguing about whose suit it is . . . just put the fire out!!"

salt engineering



Easy new way to control brine strength during cucumber and sauerkraut pickling

Here's a simple method of maintaining your pickling brine at a desired strength. Place 50-lb. Sterling Brine Kubes on the wooden cover of your curing tank. The Kubes, made of compressed, highest-purity evaporated salt, readily and uniformly dissolve in the pickle. When the brine is built up to full strength, merely roll the Kubes up on the beams.

Enthusiastic users of this system report many advantages. The even rate of dissolution of Brine Kubes eliminate any "peaks and valleys" effect in the strength of the brine. There is no spilled, wasted or mismeasured salt. Kubes, with convenient hand grips molded into them, are a lot easier to carry than awkward bags. And, as an extra dividend, the weight of the Kubes holds the cover down during fermentation.

The number of Kubes needed per tank and the duration of immersion will, of course, depend on your particular operation. Your International Technical Service Representative can help you determine such details. As a matter of fact, he can be of great service to you in *all* your salt-using operations: seasoning, water softener regeneration, curing.

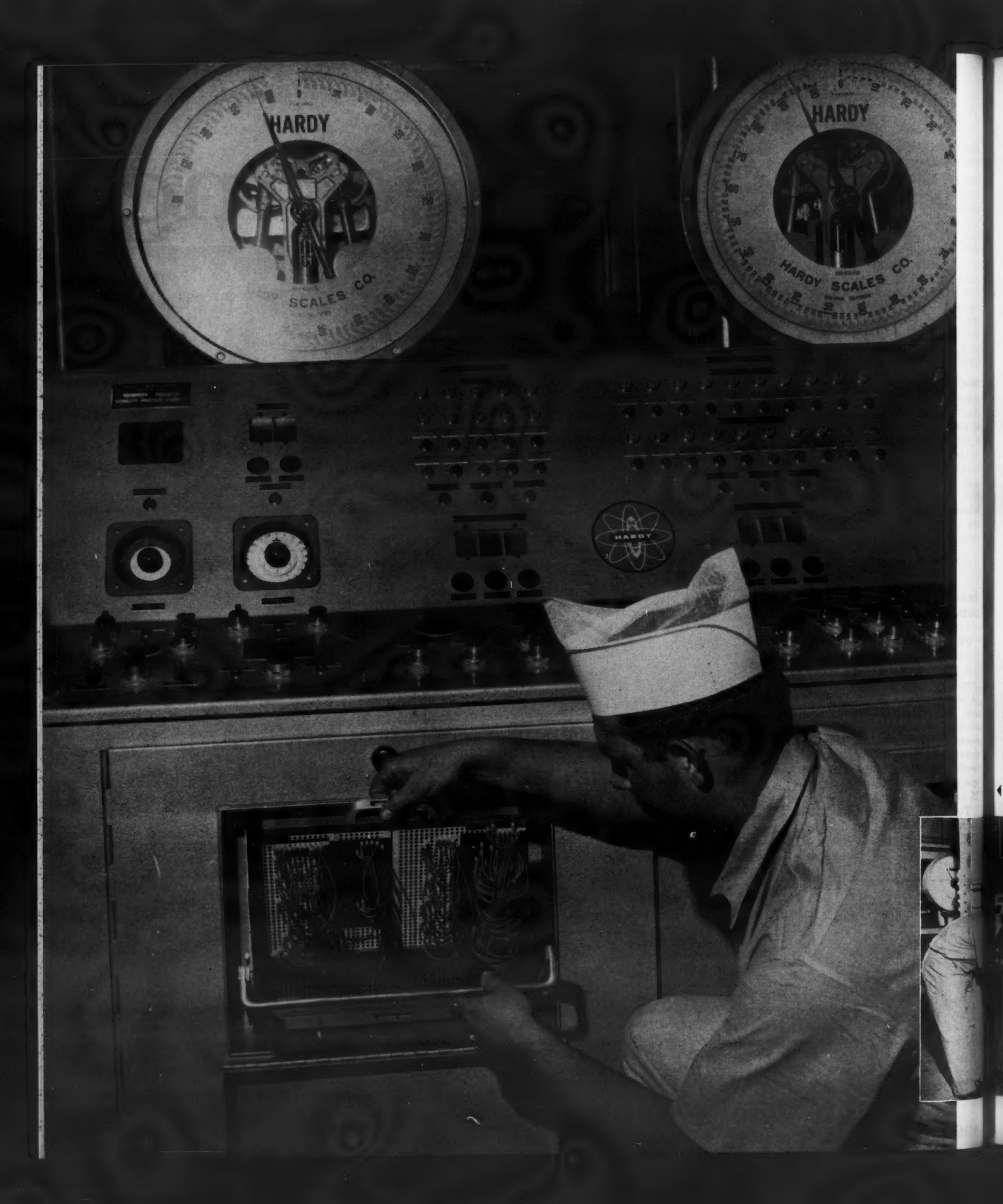
Backed by over fifty years' experience, your International Technical Representative is uniquely equipped to offer assistance on any phase of salt or brine usage. Even if you're satisfied with your present system, perhaps it *could* be improved. Why not review your operation with an International Salt representative? He can make sure that you're taking advantage of the newest innovations in salt engineering. Write International Salt Company, Clarks Summit, Pa., or nearest district office.

BOSTON CHARLOTTE CINCINNATI NEWARK NEW YORK PITTSBURGH
BUFFALO CHICAGO DETROIT NEW ORLEANS PHILADELPHIA ST. LOUIS

INTERNATIONAL STERLING SALT SALT COMPANY

"A STEP AHEAD IN SALT TECHNOLOGY"

7220 on Reader Service Slip.


HARDY
SCALES CO.
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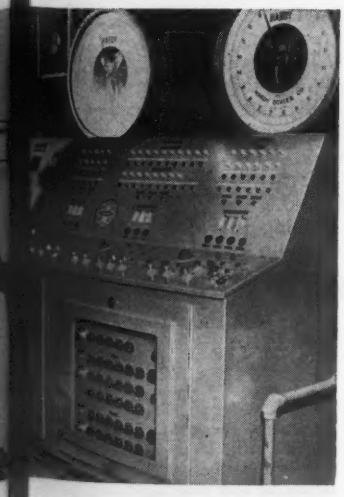
HARDY

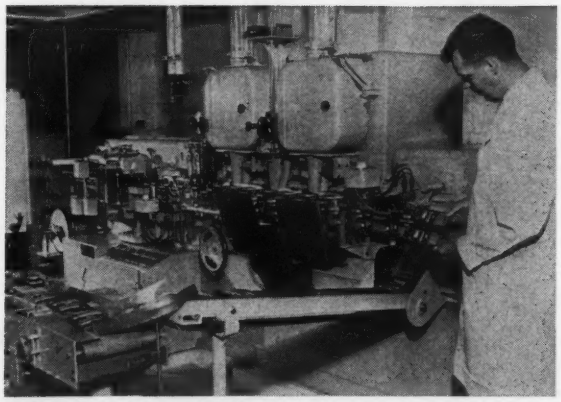
Corn Products combines Old World artistry, New World engineering know-how to

Produce multi-ingredient dehydrated soups automatically... under precise control

FP STAFF

Individual soup formulas are set up on electronic "plug boards," which, in turn, are inserted in master control section of the batching-control Robac console. Three such consoles, as in inset, automatically control operations on the three dehydrated-soup production lines. (In actual practice, "plug board" has additional protective cover, here removed to reveal wiring)





First packages of Knorr dehydrated soups, American version, are conveyed off SIG horizontal pouch former-filler-sealer on way to cartoning

Packaged in special climate-proof foil-poly-pouch stock-foil laminated "paks," complete Knorr dehydrated soup line (see above) includes Chicken and Noodle, Garden Vegetable, Golden Onion, Smoky Green Pea, Cream of Leek, Cream of Mushroom, and Beef and Noodle. Each carton contains two foil "paks," filled and sealed on machine, which hold 3-4 servings each

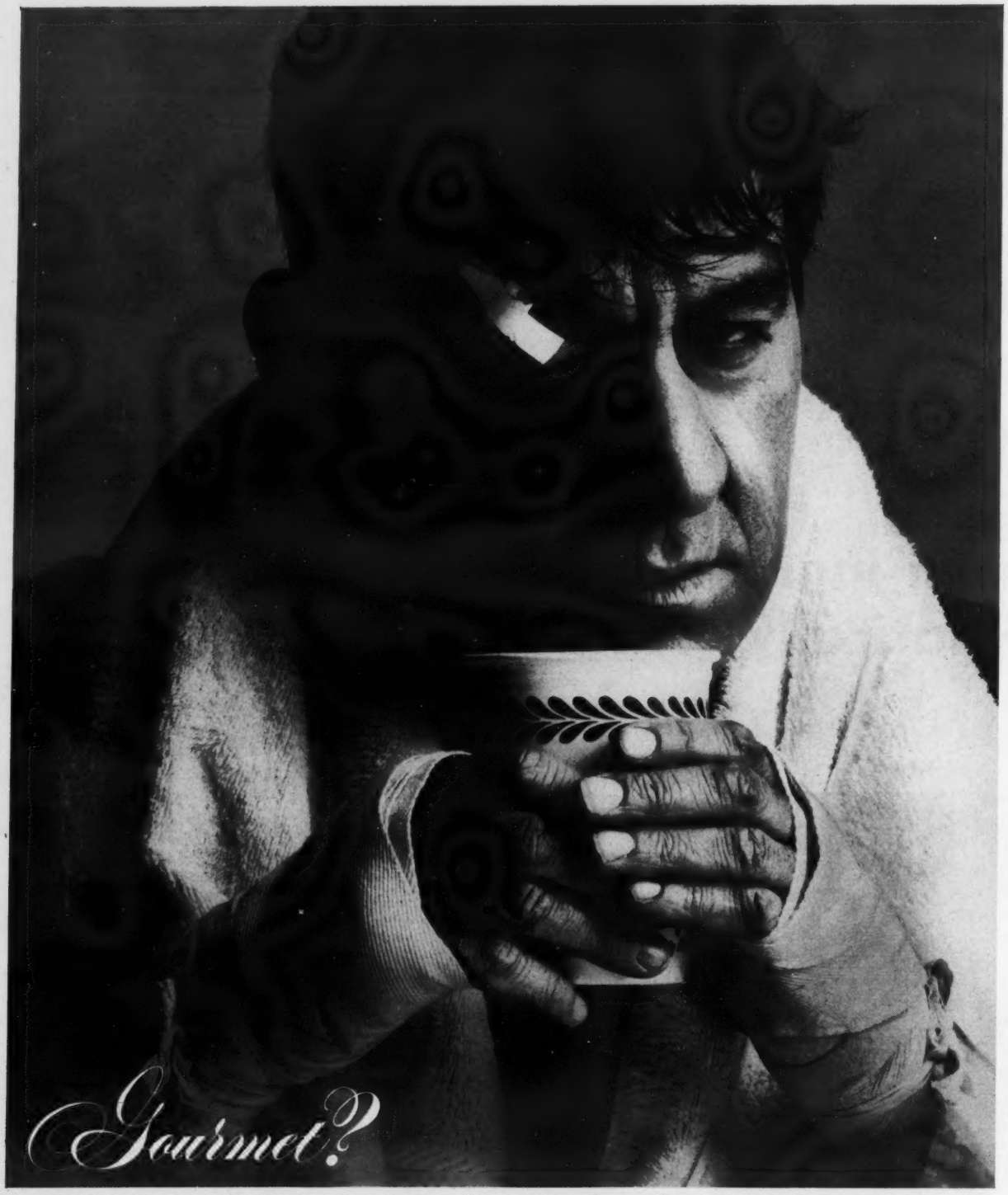
THE MOST ADVANCED manufacturing techniques in the food processing field are being employed by Corn Products Company in producing its newly introduced American line of dehydrated soups under the Knorr label — long established as Europe's leading brand of soups.

Outstanding feature of the new six-floor plant, located at Corn Products' huge Argo, Ill., food processing complex, is its emphasis on automation.

With product quality a prime object, the company has drawn on the very latest in electronics for both its processing and quality control systems.

Major electronic components are three Robac Model B40 automatic batching-control consoles — one for each of the three dehydrated soup production lines.

Each console, as built, can be set to handle sequencing and proportioning of up to 40 different ingredients, and can draw ingredients from up to



No, But He Knows What He Likes! Truffles? He never heard of them. Sauce Béarnaise? He couldn't care less. But when it comes to good, plain "groceries" and sparkling pop, he's an expert. His criterion? Taste! With flavor by Felton, that taste makes him ask for "seconds". Custom-designed, every Felton flavor is painstakingly formulated to integrate with your product and add palate sparkle. Flavored by Felton, your foods keep their fresh savoriness from their first day on the shelf, till the last delicious mouthful has been eaten. If you're dreaming up a new product, or dissatisfied with the taste of an old one, send for the man from Felton. You'll like what he can do for you! Felton Chemical Company, Inc., 599 Johnson Avenue, Brooklyn 37, N.Y.

Felton

7221 on Reader Service Slip.

80 storage bins.

(A fourth console — a Robac B20 — for a meatball production line, can program up to 20 ingredients, can draw from up to 40 bins.)

"Heart" of this electronic system is a "Plug-board," corresponding to the more familiar electronic punch-card.

By means of the wiring arrangement on this small removable board (see photo), formula and processing sequence are pre-set for each soup in the seven-soup Knorr line.

When beginning a run, the plug-board for a given soup formula is inserted into one of the Robac consoles. After necessary checks for readiness made on the console itself, actual signal to start up the line originates via pushbutton from a central master Data Control Room.

Following each individual ingredient run, console signals Data Control Room, and process is advanced to next step via pushbutton signal from Control Room.

In event of malfunction at any point in the production process, the lines are shutoff automatically and the point of trouble immediately registered on the master control panel in Control Room.

Printing system — an integral part of the over-all control system — prints out ingredients added, and their weights, in a code as the ingredients are added.

This information on quantity and quality of ingredients is fed back continuously from the three soup production lines into the Control Room to form an orderly printed "type-out" record.

This record then is checked against the formula, and with analytical and subjective laboratory tests constantly underway. Thus quantity and quality can be constantly monitored.

Using this data, the central operator controls the soup production process, and an entire soup-making line can be set into motion or called to

For more information on product at right, circle 7222 . . . see information request blank opposite last page.

WARNER-JENKINSON MFG. CO. RED TRADE MARK SEAL ST. LOUIS

CERTIFIED FOOD *Colors*

Tempting, eye-appeal attains its most potent sales effectiveness with Red Seal Colors of unsurpassed brilliance, purity and uniformity. Let Warner-Jenkinson produce—and precisely re-produce—the exact colors to give your products the greatest possible taste-stimulating attractiveness.

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ONE OF A SERIES OF CHATS ABOUT CONSERVATION AND CONTROL OF HEAT

SARCO TOPICS

PROBLEMS OF PRECISE TEMPERATURES IN WINE PASTEURIZATION

It's a shame that so many people think you throw grapes in a vat, press them, bottle the juice, and just wait a while to create wine. Even those who pride themselves on their knowledge of wines are seldom aware of the artful engineering required. Pasteurizing wine is actually much more delicate and tricky than pasteurizing milk.

Take temperatures. Wine must be pasteurized at 140°F. And spoilage can cause economic havoc. Those are the facts of life in the world of wine. They might not seem too difficult to live with unless you're in the wine or food processing business. Then you probably know how tough things can get when you have a rendezvous with a thermometer.

Take New York's Monarch Wine Company, producers of Manischewitz Wines. Their Problem: how to maintain the 140° temperature in the heat exchangers despite wide variations in the rate of wine flow. These variations, between 5 to 60 gallons per minute, result from slowdowns and recoveries in the bottling process. Problem: entire system must be capable of complete shutdown when necessary. Problem: wine temperatures must be raised to 140° as rapidly as possible, sometimes an immediate jump of 100°.

Attracted perhaps by aspects of the situation that had little to do with pure science, Sarco engineers applied the collective experience of Sarco technology to the solution of this serious problem. The result for Monarch: the *degree of control* the process demanded—achieved through the excellent use of Sarco Temperature-Pressure Regulators, Float Thermostatic Steam Traps, Thermo-Dynamic Steam Traps, and Pipeline Strainers.

Sarco engineers, ever resourceful, divided each of the two large Cherry-Burrell plate-type heat exchanger units into two separate sections with a blank baffle plate, each with a separate Sarco control. Thermal sensing bulbs were installed in wine discharge and throttling controls hooked into steam supply. As demand

fluctuates, one or both regulators function to maintain the 140° temperature. In higher demand, both regulators are operative; as demand drops and flow decreases, only one regulator supplies steam. Pasteur himself would have been elated.

Each of six smaller capacity shell-and-tube heat exchangers required only one regulator, with sensing bulb inserted into the outlet side of the wine filled shell, and the regulator throttling steam supply to the tube section. Thus, by controlling flow of steam to the exchangers on the basis of pressure and temperature, the Sarco regulators were able to maintain the temperature of the wine at precisely 140° regardless of fluctuations in demand or supply rate. Whew! A lot of engineering went into those two sentences.

From here on it's downhill. To secure complete cut off of the steam supply during scheduled shut-downs of the bottling run, solenoid valves were provided to supplement normal modulating action of the controls. To discharge widely varying loads of condensate continuously and remove immediately all air and incondensible gases, Sarco Float Thermostatic Steam Traps were installed on all condensate outlets. On the drips before each control valve a Sarco Thermo-Dynamic Steam Trap was installed to insure delivery of dry steam. Sarco Pipeline Strainers were installed before all steam traps and valves to protect them against damage by any foreign bodies. And thus ends a classic story of the grape.

Still, this story has been condensed far too much, really, and we feel you've been cheated out of the story's more delicious details. You needn't be, however. We've printed the facts in detail for posterity and you in Sarco Case History 185, complete with drawings that practically make it a do-it-yourself kit. If you would like a copy, we will be flattered to receive your request, and dispatch it with dispatch.

WE'RE ALWAYS IN . . . AND THE WELCOME MAT'S OUT

We always take it for granted that if you are going to be in the vicinity of our plant you'll phone or drop us a line so we can invite you to visit us. You'll find that our factory in Bethlehem, Pennsylvania, is on many well-travelled routes, and that our steam laboratory has much to offer in interest and helpfulness.

Forgive us for being immodest, but the lab is the most up-to-date of its kind in the country.

When you visit us, don't allow yourself to get sidetracked by the drill presses and automatic lathes. We're proud of this equipment but you've probably seen metal mutilated before, and it's our steam laboratory that's unique. We promise you a good show, and if you have any problems, bring them along. We'll solve them while you wait.

ANYONE FOR KEY CHAINS?

We seem to have these key chains. Want one? They're much more convenient than a case. A tiny replica of a Sarco Thermo-Dynamic Steam Trap, Type TD-50 is attached, but you can always remove it if you find it too commercial. There must be many things you could use these chains for. Fishing sinkers? Lengthening a light cord, maybe? Anyway, if your Sarco Representative is out, write in.

Pardon our monopolizing the conversation in this series of paid communiques, but we're trying our best to interest you in certain subjects that concern us both—to the point where you'll communicate. 5900

SARCO

SARCO COMPANY, INC.
635 MADISON AVENUE, NEW YORK 22, N. Y.
PLANT: BETHLEHEM, PA.

STEAM TRAPS • TEMPERATURE CONTROLLERS
STRAINERS • HEATING SPECIALTIES

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a halt with the push of a button.

In addition to maintaining absolute uniformity of highest quality ingredients, and employing the latest automated techniques in the production-control process, Corn Products recognizes that proper flavor, aroma and appearance are essential to consumer acceptance.

Consequently, the daily taste-tests by experienced taste analysts are conducted with utmost care. This panel of experts is called upon daily to make certain that the flavor of each batch is a perfect match with the established standard.

(More detailed information on these operations will be presented in an article scheduled for a future issue.) END

Robac automatic-batching control system by Hardy Scales Co., 5701 Atlantic Blvd., Maywood, Calif.; branch office at 7000 W. Archer Ave., Chicago 38, Ill.
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SIG pouch former-filler-sealer by Swiss Industrial Co., Neuhausen Rhine Falls, Switzerland.
7225 on Reader Service Slip.

Climate-proof aluminum foil pouch by Forbes Lithograph Co., P. O. Box 513, Boston 2, Mass.
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Reynolds Metals Co., Richmond 8, Va.
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Cartons by Forbes Lithograph Co.
7228 on Reader Service Slip.

The Lord Baltimore Press, 477 Madison Ave., New York 22, N. Y.
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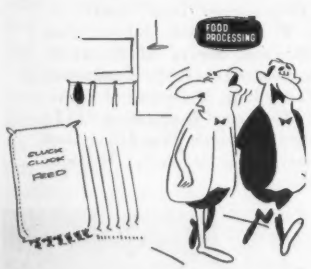

"With fumigation and insect-proof liners, I guess we've finally got the little devils right where we want them . . ."

Announcing... Another Rex First!

REX CHABELCO® CONVEYOR CHAIN ...WITH DELRIN-BUSHED ROLLERS

...for a remarkable up-to-400% increase in chain life in wet and corrosive applications!

It's Rex to the rescue, again! Now comes the complete solution to high-up maintenance costs and down-too-often conveyor lines.

Rex Chabelco *All-Steel* Conveyor Chain (it's up to 400% better than malleable chain in tough service applications) now has Delrin-bushed rollers with stainless steel bushings!

HERE'S WHAT DELRIN-BUSHED ROLLERS DELIVER: Chain life is increased up to four times because Delrin-bushed rollers resist moisture... will not corrode or freeze ...require no lubrication...reduce h.p. requirements through lower friction...promote perfect tracking.

These are facts—proved in over two years in actual conveying service and in Rex Test Laboratories.

Sound good? Rex Chabelco Conveyor Chain with Delrin-bushed rollers is good! The perfect answer to *your* operations where long, lubrication-free service is wanted. Immediate delivery in the sizes you require. Call your Rex Distributor or write: CHAIN Belt Company, 4699 W. Greenfield Ave., Milwaukee 1, Wisconsin. In Canada: Rex Chainbelt (Canada) Ltd., Toronto and Montreal.

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CHAIN BELT COMPANY

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Increase Profit with A-P-C Automatic Flow Control

Profit-minded food processing plants are turning to Alloy Products Corp. for new savings, increased production and greater efficiency! **A-P-C Automatic Sanitary Valves** combined with **A-P-C's New Wizard A-P-C Float Control** are a must for your new automatic flow control system.

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— Maintain uniform product level on every filling
— Clean lines and valves automatically and quickly
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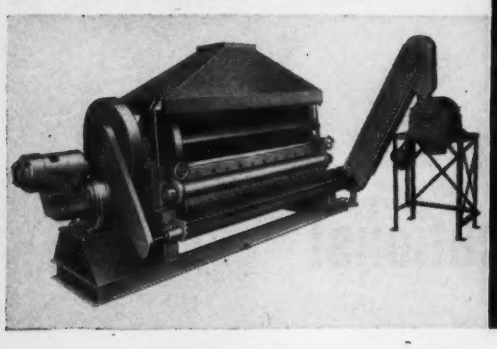
DRYING MATERIALS From Liquid Stage



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Let our engineers consult with you on your Pressing, Drying and Cooling problems or send for our catalog "P". For quick reference consult your Chemical Engineering Catalog.

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ASHRAE Symposium considers

Present status of liquefied gases for refrigeration and low-temp freezing

USES OF liquefied gases for low-temperature food freezing and for refrigeration in the handling of foods was the subject of a symposium in Denver, Colorado, June 27, 1961, sponsored by The Food Technology and Refrigeration Panel of ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers). The speakers who were on the program are listed in the caption to the accompanying photo, and some of the more interesting aspects covered follow.

New products resulting from the use of liquid nitrogen for super-quick freezing were announced by Robert Webster of the Customer Service Laboratory of Air Reduction Sales Co. Research and development work with a food company has proceeded to the point where market tests will be conducted later this year on frozen sliced tomatoes and frozen whole kernel corn (with the germ tip intact on the kernel).

Both of these products are made by ultra-quick freezing with the use of supercold liquid nitrogen as described in the June issue of FOOD PROCESSING (p. 48).

Strawberries which do not drip on thawing and are almost indistinguishable from the fresh product can also be obtained with the use of liquid nitrogen or liquid nitrous oxide. (The conventionally quick frozen strawberries experience around 40% cell damage and thaw with considerable cell drip.)

Apparently it is not necessary to cool products which are frozen ultra-quickly to the extreme low temperatures of liquid nitrogen, that is to —320 F. In fact, Webster indicated that cooling the food products to too low a temperature could result not only in unnecessary consumption of liquid nitrogen but also in undesirable effects such as

Speakers at the first symposium held in June, 1961, for considering the many and varied facets of the use of liquefied gases for low-temperature food handling were (right to left) John P. Antolak, Liquid Carbonic Division of General Dynamics Corp.; Robert C. Webster, Customer Service Laboratory of Air Reduction Sales Co.; J. J. Kane, Cryogenic Products Development Dept., Linde Co. Division of Union Carbide Corp.; V. J. Johnson, (absent from photo) Cryogenic Data Center, National Bureau of Standards; Aaron J. Brody, M & M Candies, Chairman of the Symposium; Prof. Kirby Kayes, Dept. of Food Technology, University of Massachusetts; Prof S. C. Collins, Dept. of Mechanical Engineering, M.I.T.; Dr. Walt Maclinn, The Refrigeration Research Foundation, and Prof I. J. Flug, Dept. of Food Science, (not in photo) Michigan State University

excess brittleness and splitting.

Just what temperatures are most successful was not revealed; neither was the name of the food processor who is planning the market tests with super-quick frozen sliced tomatoes and whole kernel corn.

Freezing systems: Various aspects of liquefied gas systems were considered by Professor Collins of MIT. Since about half the cooling capacity of liquid nitrogen is in the sensible heat of the vaporized gas, he suggested designs which would more effectively recover the heat.

One basic idea was to introduce liquid nitrogen at the bottom of a vertical tunnel with product entering at the top and leaving at the bottom through an air lock. The cold nitrogen gas would thus pass upward countercurrent to the incoming and warm product.

If production is relatively constant then recovery and reliquefying of the nitrogen might be economically feasible. It was pointed out that the most economical recovery would be use of the evaporator of a Helium gas refrigerator to condense the escaping nitrogen gas.

According to Webster such systems come in the range of economical feasibility when production is 3000 to 5000 lbs per hour. He also suggested seriously considering the use of liquid nitrous oxide in place of liquid nitrogen. Although nitrous oxide is more a expensive gas, it has distinct advantages. Thus, to freeze a lb of strawberries requires recycling only 8.7 cu ft of nitrous oxide vs 26 cubic feet of nitrogen.

Although liquid nitrous oxide boils at a higher temperature than liquid nitrogen, its temperature of −127 is low enough for super-quick freezing applications.

Johnson of the National Bureau of Standards pointed out that liquid-gas refrigeration systems should be considered as supplemental refrigeration to the less expensive conventional mechanical refrigeration unless it is de-

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...a phone call to your Rex Distributor solves your problem. If he hasn't got IT in stock (incredible), he can get IT within 24 hours from the nearby Rex CHAIN Belt warehouse. Protect your temper ...your fingernails...your production schedules...by turning your problems over to your dependable Rex Distributor.

IT (freely translated) means Rex Quality Drive and Conveyor Chains and Sprockets. CHAIN Belt Company, 4699 W. Greenfield Ave., Milwaukee 1, Wisconsin. In Canada: Rex Chainbelt (Canada) Ltd., Toronto and Montreal.

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sired to cool below −20 F.

Refrigerated trucks is one application where supplemental refrigeration with liquefied gases is increasing. In certain applications, J. J. Kane of Linde's Cryogenic Products Development Dept. claimed that it was more economical to use liquid nitrogen in place of mechanical refrigeration. He mentioned as an example a fleet of route delivery refrigerated trucks equipped with Linde's Polarstream non-mechanical refrigeration system with automatic temperature control, described in last month's issue (p 96).

J. P. Antolak, Liquid Carbonic Division, General Dynamics Corp., reviewed the use of liquid carbon dioxide systems for pre-cooling and post cooling of trailers or route delivery trucks. With the use of carbon dioxide systems temperatures of trailers can be brought down in 3 to 5 minutes; temperatures of rail cars in 5 to 8 minutes. The self-contained automatic unit for storage of liquid carbon dioxide at point of use was described in last month's issue (p. 19). END

What's the latest on

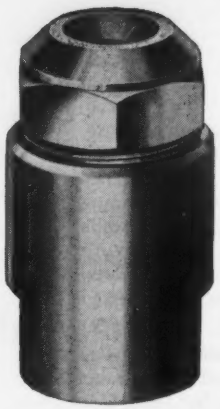
Coordinated Handling?

Next month, FOOD PROCESSING will publish representative current thinking by the industry's handling and distribution executives — plus material handling and warehousing authority Irving M. Footlik's additional comments on the evident state of progress.

In the July issue, Mr. Footlik appealed to the food industry to start thinking and working together as an industry toward developing a simplified, economical, workable system of handling from processor to store.

His challenging ideas already have stirred some replies. Some respondents agree, some disagree, others hedge cautiously. Watch for these comments!

THE EDITORS



DELAVAN CARBIDE SPRAY DRYING NOZZLES LAST LONGER

Tungsten carbide orifice plus patented swirl chamber combine to give you a longer lasting, better performing nozzle. Flow rates and spray angles are certified — your assurance of performance as rated. For full facts on the Delavan SDX (illustrated) and others, write for Catalog SD-1 and SD-2.

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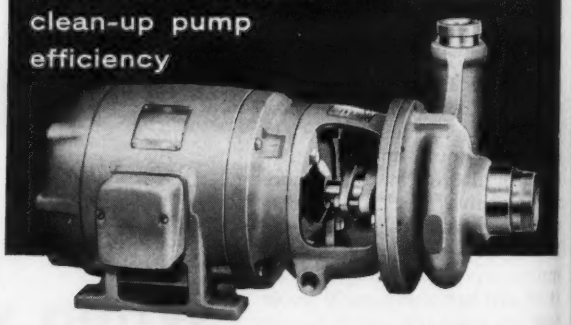

You can't... unless you already have an AMPCO Stainless Steel Pump

You get twice the output energy of sanitary pumps — double the efficiency! Ampco pumps are made for high heads and transfer service. They are quiet and vibration-free — and they won't overload.

Closed impeller contributes to high efficiency and long life, eliminates the need for shaft adjustment, permits close-coupled assembly. Casings and shafts are protected by replaceable wear rings and shaft sleeves.

Carried *in stock* in principal industrial areas. Capacities to 600 gpm., heads to 180 ft. Write for Bulletin P-3c.

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P-49

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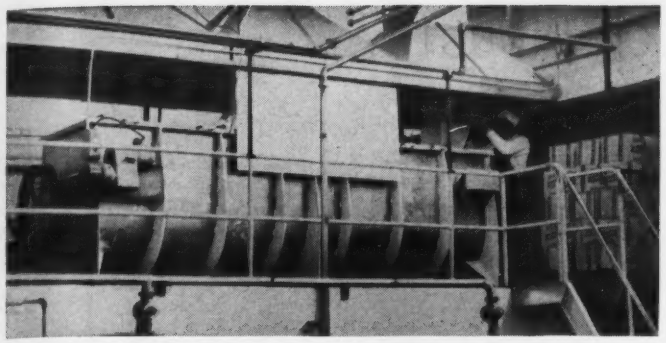
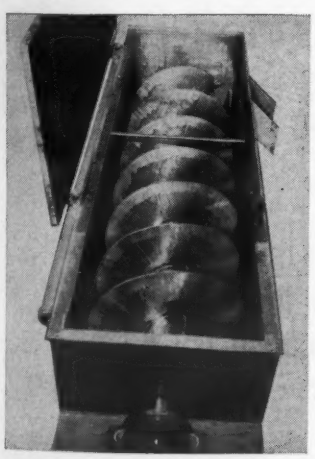


Continuous blancher is located on mezzanine to save space and provide gravity discharge to fillers. On opposite side of blancher are water sprays for washing spaghetti as it discharges

Straight-through, perforated-screw process maintains straight-line temp chart as spaghetti . . .

Blanches continuously — more uniformly, at less cost

WILLIAM HEINBAUGH
Plant Manager*
IXL Food Company
KARL ROBE, Associate Editor



Interior view of similar blancher shows perforated screw. IXL blancher maintains 1/16 in. between screw and trough

PROBLEM: When processing spaghetti for canning, uniform blanching is necessary to obtain both optimum final texture and uniform fill of can.

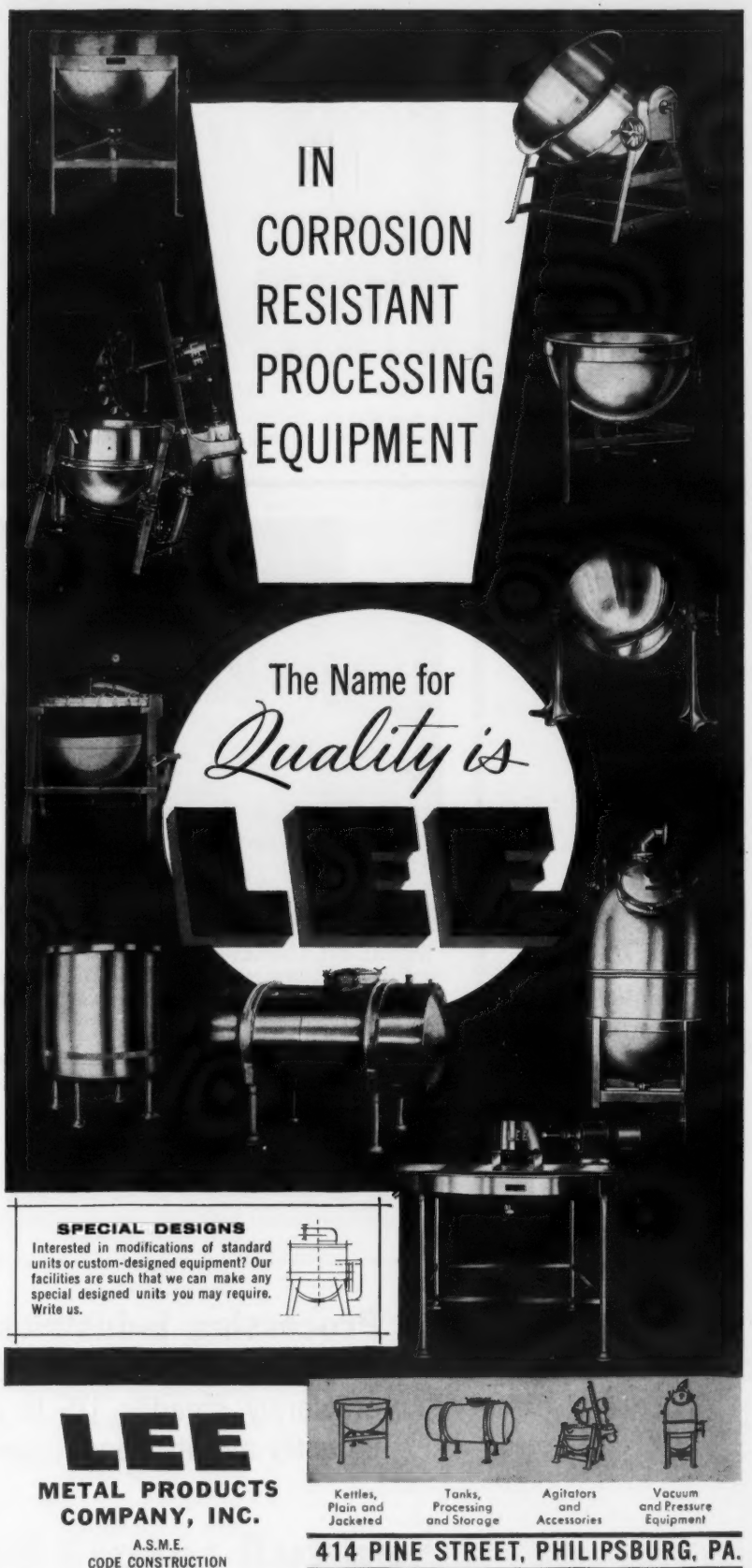
When blanching was done in 250 gal batches in steam jacketed kettles, assurance of uniformity was lower than the degree of control desired by IXL Food Products, San Leandro, Calif.

When blanched in batches, for instance, temperature of water dropped quickly below boiling when the charge of dry spaghetti was added. IXL wanted to avoid this temperature drop.

Cost of boiling water in 250-gal batches for use in an 8- to 9-minute blanching then discharging this water to the sewer was a loss IXL wished to reduce.

Labor expense of filling ket-

*On April 17, three days after our interview, Bill Heinbaugh, a knowledgeable and progressive member of the food industry, died of cancer. It was typical of Bill that he worked right up to the last, and was even then planning new improvements. George I. Whitman, Bill's assistant, is now plant manager.



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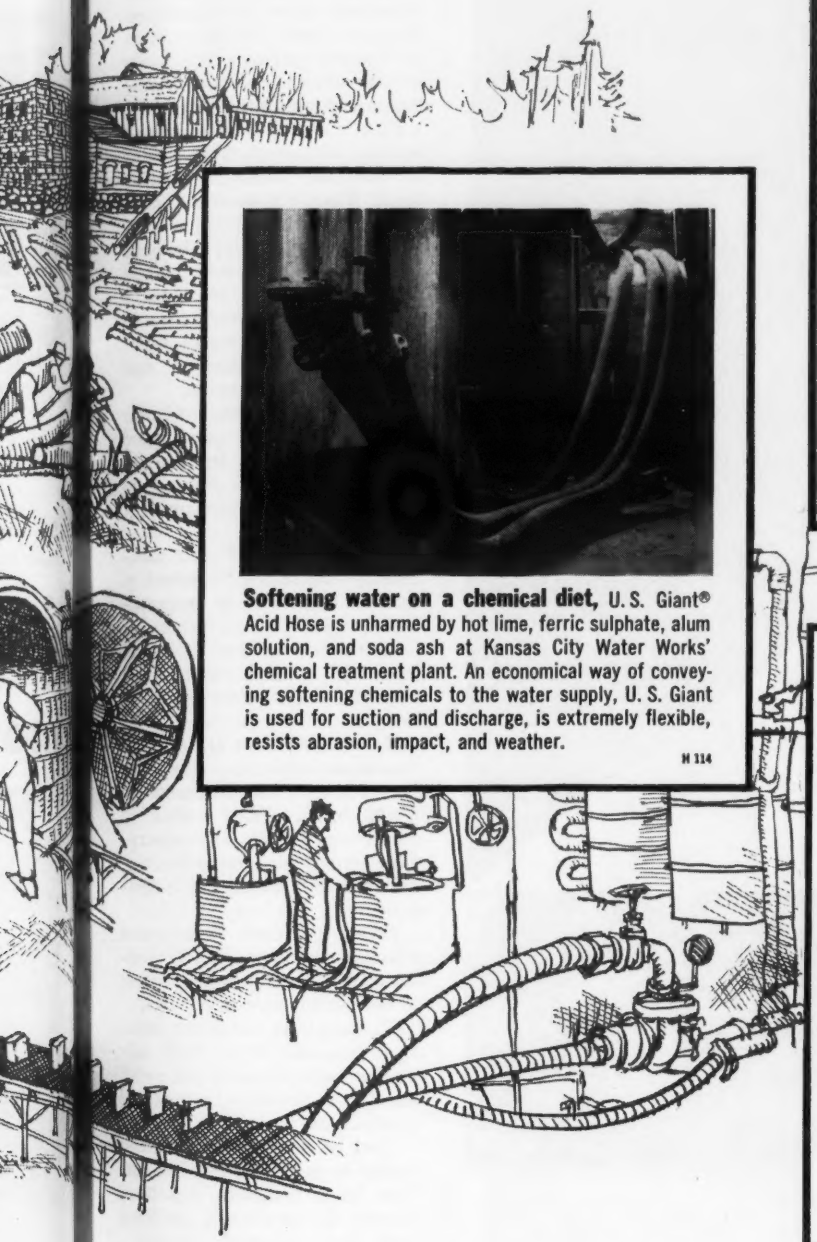
US RUBBER

AT THE HEART OF INDUSTRY...

"We turn out 3,000,000 feet of board a day," reports the chief engineer of Masonite Corp., Laurel, Miss., "and our entire volume of wood chip required to fabricate the board is carried on US Oilproof Paracril® Conveyor Belts that operate 24 hours a day, 7 days a week over deep-trough idlers. This belt system has reduced downtime considerably, cut maintenance costs 25%."

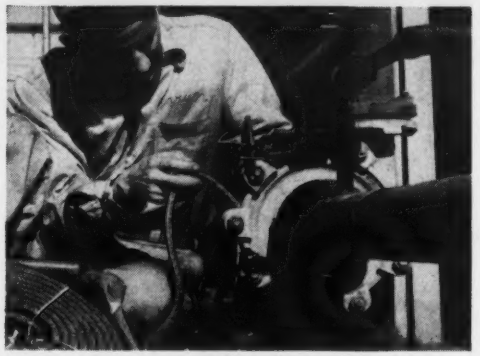
CB 117

Processing industries of every kind find in US the superior industrial rubber product quality that keeps materials flowing—freely, efficiently, steadily. US is at the heart of industry because US knows industry and its needs...and serves those needs better.



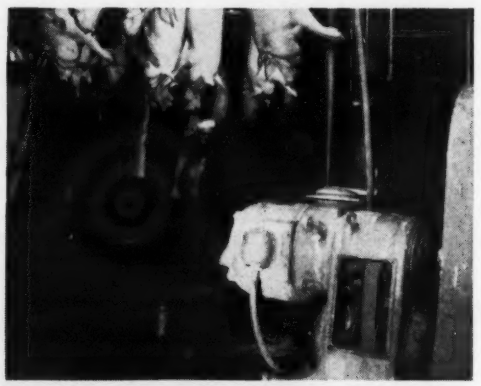
Softening water on a chemical diet, U. S. Giant® Acid Hose is unharmed by hot lime, ferric sulphate, alum solution, and soda ash at Kansas City Water Works' chemical treatment plant. An economical way of conveying softening chemicals to the water supply, U. S. Giant is used for suction and discharge, is extremely flexible, resists abrasion, impact, and weather.

H 114



"Outlasted any other packing tested as much as 10 to 1," reported a large chemical plant about U. S. Solvent Packing, Style 414. Used on its caustic and solvent pumps, this US packing ended clean-up chores, increased production, reduced injuries due to leaks by 75%. Look beneath the surface and you'll find U. S. Rod and Sheet Packings sealing better, lasting longer, saving money throughout industry.

P 101



More than 6 times the life of other Variable Speed Belts, reports the Storm Lake, Iowa, plant of Hygrade Food. The first US Variable Speed Belt installed has already outperformed the previous belts by more than 6 to 1. What's more, it required no dressing or other maintenance and, unlike previous belts, has not developed uneven edge wear which shortens equipment life.

VSB 101

For every industrial rubber product need, turn to US. For Conveyor Belts, V-Belts, the original PowerGrip "Timing"® Belt, Flexible Couplings, Mountings, Fenders, Hose and Packings . . . custom-designed rubber products of every description. Discover why U.S. Rubber has become the largest developer and producer of industrial rubber products in the world. See your U.S. Rubber Distributor or contact US directly at Rockefeller Center, New York 20, N. Y.

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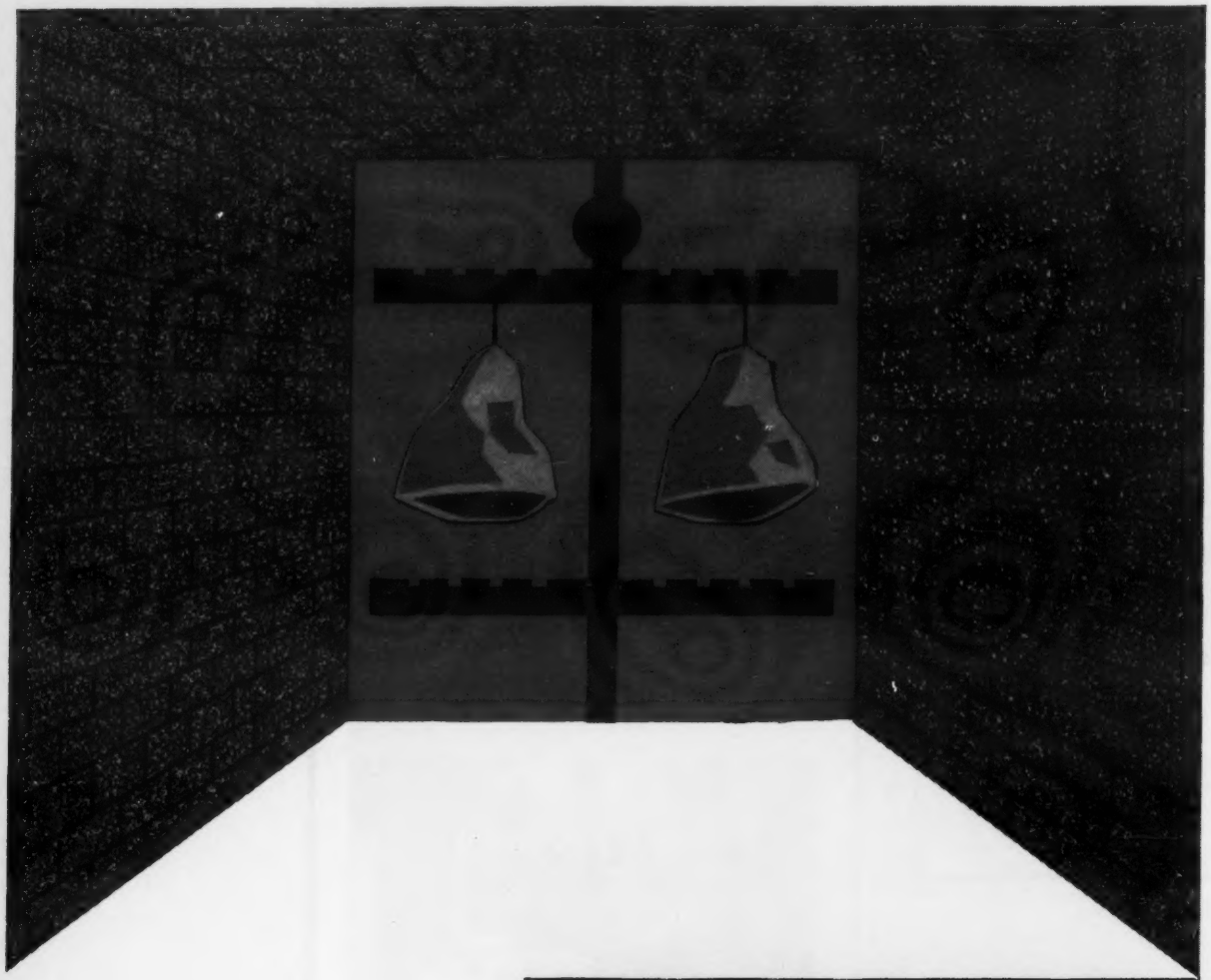
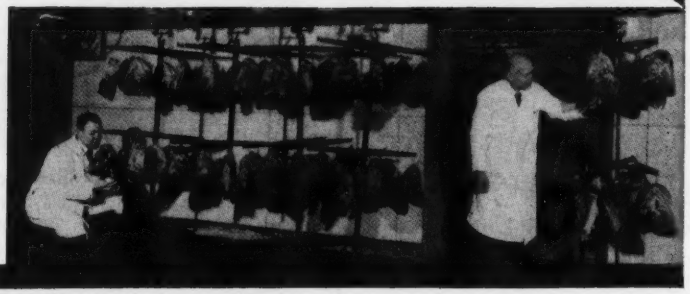


FOAMGLAS® Insulation works for PINCUS MEAT PACKING



EVIDENCE: Meat quality depends on topflight storage space insulation. Cellular glass FOAMGLAS in the walls and ceilings of the storage facilities of Bernard S. Pincus Company, Philadelphia, Pa., keeps temperature constant because it *stays dry*, despite extreme humidity conditions.

Moistureproof FOAMGLAS holds temperatures between 32°F and 50°F in a smoked meat storage room with a humidity point within a 50% to 80% range. And in a dried beef cooler, FOAMGLAS insulation holds the line on still another essential temperature requirement.

And FOAMGLAS cut construction costs because its strength and rigidity permitted the use of partition walls, without structural supports, for two interior walls in this Pincus application.

Check FOAMGLAS for any insulation problem, piping, tanks, equipment or underground applications. Write for a case history fact sheet on Bernard S. Pincus, and a copy of our low temperature installation specifications: Pittsburgh Corning Corporation, Department FP-81, One Gateway Center, Pittsburgh 22, Pa. In Canada: 3333 Cavendish Boulevard, Montreal, Quebec.

Pittsburgh Corning makes available a complete line of accessory materials for use with FOAMGLAS. Write for free Data Sheets.

PITTSBURGH CORNING

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tles, transferring blanched spaghetti to gondolas and from thence to fillers was another.

Solution: Spaghetti is now blanched as it is conveyed through water by 36-in diam perforated screw. Screw is closely fitted inside round-bottom trough 42 in. high.

Eleven steam diffusers along bottom of trough keep water at constant boiling temperature. Water is maintained to centerline of screw.

One man feeds dry spaghetti into 12-ft long unit. Stainless perforated screw conveys product at controlled rate through boiling water, discharges it at opposite end through a side opening.

Blanched spaghetti drains on an inclined perforated screen and feeds by gravity down a stainless trough to filler in adjacent room on floor below.

Blanch time of 8 or 9 minutes is controlled by speed of screw. Capacity is approximately 1500 lb product/hr. Construction is Type 304 stainless, with hinged cover which exposes entire unit for cleaning.

Results: Process is continuous and batch-labor expense has been reduced. Spaghetti feeds into boiling water in small increments so temperature curve is virtually unaffected and blanching is uniform.

Steam diffusers keep water agitated and spaghetti free-flowing without damage as it is conveyed forward.

Perforations in screw prevent pumping water over discharge opening and are small enough to prevent hang-up of product on screw flight.

Cost of heating and wasting water to sewer in batches has also been reduced. Spaghetti blanch is consistent, uniform and under positive control.

Rietz TL-36 Thermoscrew is product of Rietz Manufacturing Co., 150 Todd Road, Santa Rosa, Calif.

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Latest on biochemistry, physiology of oranges

"The Orange — Its Biochemistry and Physiology", is a comprehensive review of recent data, including a considerable volume of original

work, previously unpublished.

Contents include topics such as principal juice constituents; organic acid and buffer properties; pectic substances; nitrogenous constituents; oil in peel, juice sac, and seed; coloring matters; citrus flavenoids; and enzymes and enzyme activity.

The twelve chapter book of 475 pages represents the cooperative effort of eleven authors.

Copies are available from Agricultural Publications, 207 University Hall, Univ. of Calif., Berkeley 4, Calif. Price is $6.50 per copy.

Automation progress in the dairy industry

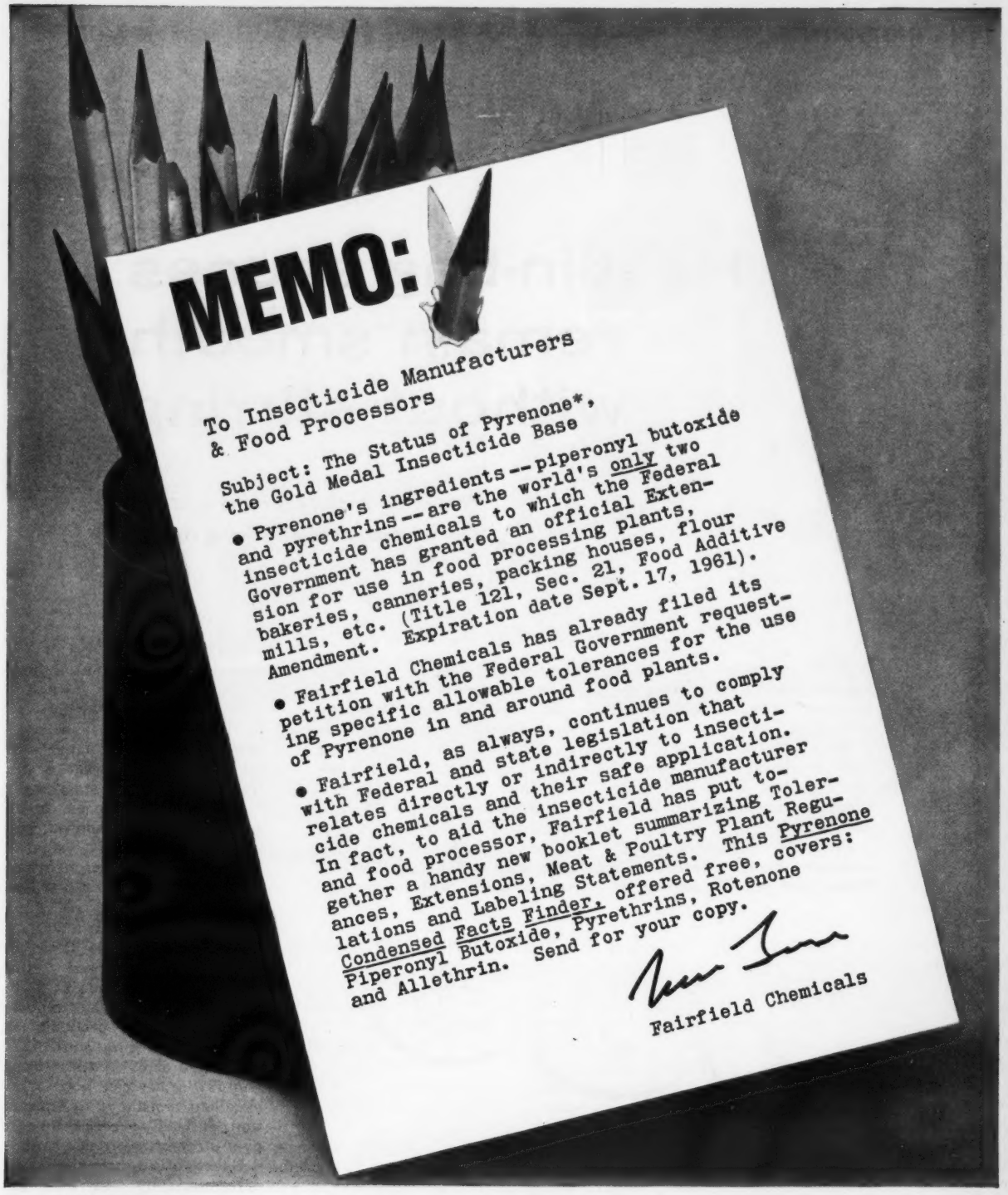
Automation was the topic of discussion at the Ninth Annual Dairy Engineers Conference held recently at Michigan State University. Proceedings of that conference are available in a 93 page mimeographed booklet.

Booklet consists of introductory comments and 17 papers that were presented about many aspects of automation in that industry. The papers report of the progress, trends, successes, problems, and future challenges as seen by experts in the field.

Copies of the booklet are available from the Continuing Education Service, Michigan State University, East Lansing, Michigan. Price is $2.00 per copy.

Next year's conference will be held at Michigan State University on February 27 and 28.

"Smith, I've told you time and again, 'Hustle, hustle, hustle'!"


MEMO:
To Insecticide Manufacturers & Food Processors
Subject: The Status of Pyrenone*, the Gold Medal Insecticide Base
• Pyrenone's ingredients--piperonyl butoxide and pyrethrins--are the world's only two insecticide chemicals to which the Federal Government has granted an official Extension for use in food processing plants, bakeries, canneries, packing houses, flour mills, etc. (Title 121, Sec. 21, Food Additive Amendment. Expiration date Sept. 17, 1961).
• Fairfield Chemicals has already filed its petition with the Federal Government requesting specific allowable tolerances for the use of Pyrenone in and around food plants.
• Fairfield, as always, continues to comply with Federal and state legislation that relates directly or indirectly to insecticide chemicals and their safe application. In fact, to aid the insecticide manufacturer and food processor, Fairfield has put together a handy new booklet summarizing Tolerances, Extensions, Meat & Poultry Plant Regulations and Labeling Statements. This Pyrenone Condensed Facts Finder, offered free, covers: Piperonyl Butoxide, Pyrethrins, Rotenone and Allethrin. Send for your copy.
Fairfield Chemicals

*Reg. U. S. Pat. Off. F. M. C.

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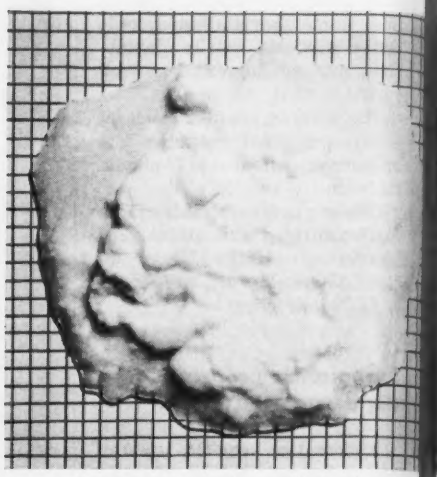
Heat-in-bag sauces remain smooth without stirring

Waxy rice thickeners resist curdling, lumping even after long storage



White sauce *made with wheat flour was stored at 0° F for 5 mo*

RISING consumer interest in heat-in-bag frozen foods is refocusing attention on waxy rice flour.

Sales are lost if sauces, fillings or gravies are curdled when served. Waxy rice flour prevents this quality deterioration.

Products thickened with common cereal starches or flours are not as smooth as they were before freezing, even with stirring.

In heat-in-bag products, waxy cereal sauces and gravies reconstitute without stirring so that no lumps result when consumer serves the dish.

Extensive tests at Western Regional Research Laboratory, Albany, Calif. showed that separation and curdling of sauces made with waxy rice flour is prevented for as long as 11 months at 0° F storage.

In these tests (ranging as far back as 10 years), separation of water from sauce was nil after 5 mo storage at 0°, slight after 11 mo storage.

In contrast, sauces made with regular flour showed between 30% and 40% separation of water fraction when thawed after first month or two at 0° storage.

Sauces containing a 3 to 2 ratio of waxy rice flour to wheat flour showed little separation after 5 mo at 0° F.

Recent commercial experience with such products as chicken a la king show that a mixture of 60% wheat flour and 40% waxy rice flour gives excellent resistance to separation as well as reducing cost over straight waxy cereal use.

Exact ratio to use should be determined by tests with the specific product. Cost of waxy rice flour is approximately equivalent to other waxy cereals on point-of-origin basis.

In the WRRL studies it was found that homogenizing the sauces containing waxy rice flour or waxy corn flour resulted in thinning and was unnecessary for increasing smoothness.

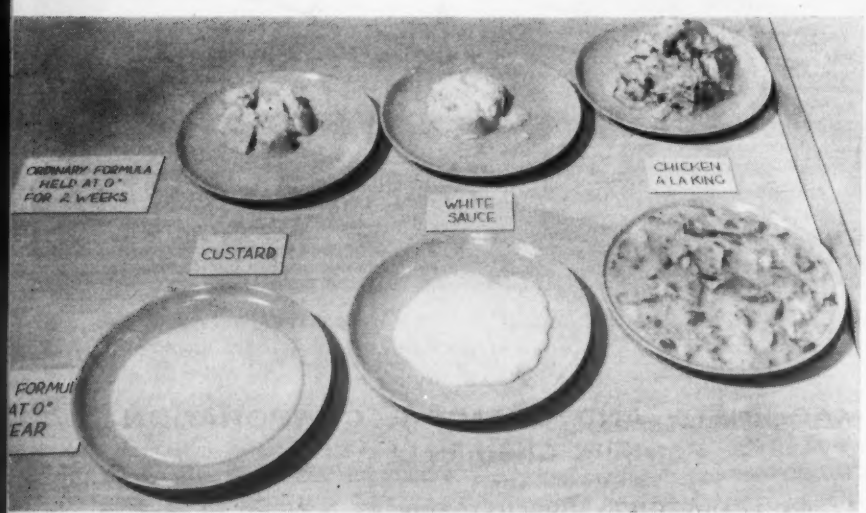
Tests showed that stability of gravies was similar to that of white sauces during freezing. Gravies thickened with waxy corn starch showed liquid separation and curdled appearance after 2 mo at 0° F, as was also true with white sauces made with waxy corn thickeners.

Research and development work on the use of waxy thickeners was done at the Western Regional Laboratory, USDA. Waxy rice flour is available commercially from Rice Products Co., 275 Post St., San Francisco 8, Calif.
7242 on Reader Service Slip.

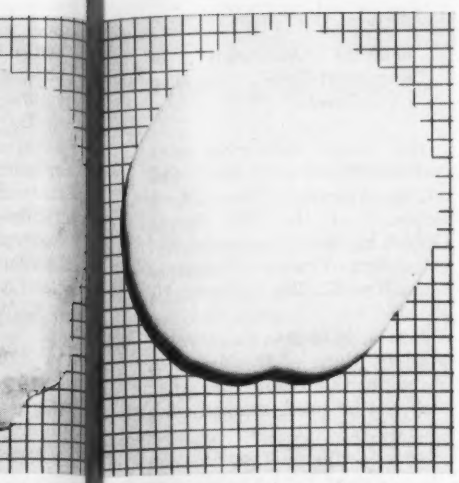
Tested at 10° F storage temp, waxy corn sauces showed liquid separation after 2 weeks, waxy rice sauces after 2 months. Sauces made with either the flour or starch of these two cereals gave same results.

Cereal differences: Waxy cereals contain over 99% amylopectins, whereas common cereals contain 72 to 77%, with the remainder mostly linear starch polymers. Amylopectins are branched.

Presence of the branched-chain polymers accounts for ability of waxy cereal thick-



Top row: *Custard, white sauce and chicken a la king made with conventional thickeners, stored 2 weeks at 0° F*
Bottom: *With waxy rice thickener, stored 1 year at 0° F*



Waxy-rice *thickened sauce was stored same length of time. Both were thawed at room temp*

eners to resist separation and retain smoothness. Type of amylopectins apparently varies among waxy cereals. This may be due to different degrees of branching—the more branching, the better.

Of the food starches, waxy rice flour has least affinity for iodine (highest degree of branching), followed by waxy corn, waxy barley starch, and amylopectin from corn and from potato.

Waxy cereal products retain ability to flow under certain conditions when other cereals set up a gel.

For this reason they are attractive for some canned foods where resistance to gelation after autoclaving, as well as to curdling and separation, is important.

Like all starch products, they are subject to breakdown and loss of viscosity when overcooked, so product temp of 190° F should be maximum, with little agitation after this temp is reached.

Last year WRRL reported that salad-type dressings made with 30% oil, 5.3% egg yolk and using waxy rice flour as thickener are stable at 10° F and higher. Waxy rice showed best stability of four thickeners tried. END

From beefsteak to biscuits . . .

MILES HAS A WAY WITH FOOD

to prolong shelf life, protect color, tenderize, adjust pH, speed processing!

WITH HIGH-PURITY CITRIC ACID, produced by Miles' unique deep-fermentation process, you multiply the benefits of this versatile ingredient. And Miles is an experienced large-volume producer, producing quantities that assure you of a steady supply . . . a midwestern source with over 70 warehouses located strategically, stocked abundantly.

WITH ANTIOXIDANTS, where accurate formulation is important to you from the standpoints of economy and product quality, Miles is making important contributions. **CONSIDER TAKATABS,** for example. Here is sodium erythorbate (isoascorbate) in convenient tablet form — accurately premeasured units. Waste and spillage are virtually eliminated, and the possibility of "human error" in the plant is greatly reduced. For the small-quantity user, Takatabs cost less in the long run.

WITH A WIDE CHOICE OF ENZYMES, Miles is not limited to a few products from which to choose the proper enzyme to do *your specific job.* Selecting from the widest range of commercial enzymes available — manufactured by its famous Takamine plant — Miles' sales and technical service personnel can pick the enzyme to meet your requirements accurately, objectively and economically — not just "come close."

Get the additional information you need about the products Miles makes for the food industry. Write:

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add
nutrition-flavor
sales appeal
to your product with
Lake States®
or Bakon® (hickory-smoked)
Torula Yeast

Which will spark more sales of your product... *flavor or nutrition?* Lake States offers you a choice of two ingredients: nutritional Dried Torula Yeast and flavorful hickory-smoked Bakon Yeast. At economical cost, Lake States can help you boost your share of the market with a *new* or *improved* product.

LOW COST NUTRITION WITH TORULA YEAST

If your product already possesses a desirable taste, you can increase sales at low cost by adding Lake States Torula Yeast as a nutritional ingredient. Many food and drug manufacturers already use Torula either as an ingredient or as a base to attain a higher nutritional level in their products. Some examples: baby foods, institutional foods, seasoning blends, pharmaceuticals.

Your product can reap the sales value of important nutritional factors with Lake States Torula Yeast. Torula is high in protein (50% minimum), a rich source of lysine and all the amino acids of meat; Torula is a reliable source of the entire vitamin B complex, also containing essential minerals such as calcium, iron, phosphorus and iodine.

Food technologists appreciate the fact that Lake States Torula Yeast is produced from sterile media under vigorous and constant quality control. Thus, Torula is noted for its purity, uniformity, stability and long shelf life. Torula blends well with most products and is bland in flavor.

EXCEPTIONAL FLAVOR WITH BAKON YEAST

Perhaps the strongest sales appeal of your product is taste. If you would like to enhance your product's flavor, or if your product needs a new taste, consider the genuine hickory-smoked flavor of Bakon Yeast. A number of leading food processors have found hickory-smoked Bakon Yeast an ideal flavoring ingredient (and high in nutrition, too) for their products. Examples: baby foods, cheeses, spreads, nibbling foods, crackers, stews and vegetables, soups, spice mixes and seasoning blends. Taste tests have disclosed Bakon Yeast to be superior to even a natural bacon flavor.

DUAL VALUE OF BAKON YEAST IN MARKETING A PRODUCT

Bakon Yeast is 100% hickory-smoked Dried Torula Yeast and as such contains all the nutritional values of Torula. This presents your product with a *double value* which your marketing experts can put to optimum advantage: flavor plus.

Bakon Yeast, Inc., the original producer of smoked yeast, has joined Lake States, America's pioneer and leading producer of Torula Yeast. With expanded production facilities at Rhinelander, Wisconsin, Bakon customers are assured prompt delivery from fresh stock. Nutrition from one low cost ingredient... Bakon Yeast. If yours is a specialty product, consider the fact that Bakon Yeast is salt-free and contains no starch, sugar, meat or meat extract; Bakon meets requirements for low sodium diets. Furthermore, Bakon Yeast is stable, uniform, and conforms to all FDA regulations.

YOUR BEST PROOF

The most convincing facts on the advantages of incorporating either Torula Yeast or Bakon Yeast in your product is the aggregate of food and drug firms which are now marketing Bakon-flavored or Torula-enriched products. But make your own test. Send for complimentary test samples (specifying Lake States Torula or Bakon Yeast) to Lake States, Dept. FP

TORULA
gives your product vital nutrition to increase sales.

BAKON
gives your product an exciting bacon-like taste plus nutrition for greater sales appeal.

Lake States
LAKE STATES YEAST AND CHEMICAL
DIVISION OF ST. REGIS PAPER COMPANY
RHINELANDER, WISCONSIN

SALES OFFICE: 420 Lexington Ave., New York 17, N. Y.; or W. Glenn Wunderly Company, 232 North Lake Avenue, Pasadena, California; Kempsell Associates, P. O. Box 27, Garland (Dallas), Texas; Dillons Chemical Company, Ltd., Montreal and Toronto, Canada

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ingredients

Roquefort — a registered trade mark

"Imitation Roquefort" or "Roquefort-Style" labeling not allowed

The name *Roquefort* is a certification mark registered on the Principal Trade-Mark Register of the US Patent Office by the Community of Roquefort, France (Registration No 571,798, March 10, 1953).

Hence, if cheese flavoring is used in place of Roquefort in a recipe, the name *Roquefort* may not be used, nor may any

Simplified trade-mark seal is usually printed in red

name such as *Imitation Roquefort* or *Roquefort-Style* be substituted.

The name of *Roquefort* is subject not only to FDA regulations but also to the Trade-Mark Laws of the United States, under which the use of the name is prohibited on cheese products unless it is licensed or authorized by the Community of Roquefort, France, which maintains an office in New York City 18 at 8 West 40th Street.

The control exercised is purely a quality control — no fees, royalties or other payments are involved.

True black color certified for food use

Certified Midnite Black Shade, a mixture composed of FD & C primary colors, is water soluble, and a true black.

According to Guy C. Bates, president of Bates Chemical which developed the color, it is the first true black color with FDA certification. Prior to Midnite Black the available certified black food colors had a green, purple or brown hue.

Samples and additional in-

formation can be obtained from the Bates Chemical Company, a div. of Cromptin & Knowles Corp., Lansdowne, Pa.

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Series of food emulsifiers listed with applications

Surface active agents (emulsifiers) for improving taste, appearance, and other physical characteristics of foods are listed in a 12 page bulletin from Glyco Chemicals Div. of Chas. L. Huisking & Co.

Describes properties of 10 types of emulsifiers as well as applications and indicates most efficient use levels.

Food applications include bakery products, confections, ice cream, flavors, miscellaneous specialty items.

Quantity of each emulsifier permitted under federal regulations is shown.

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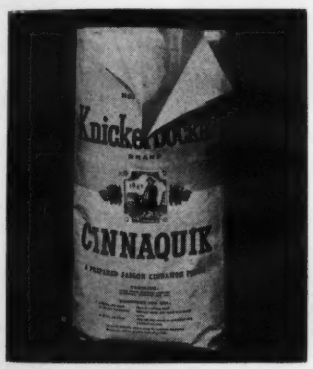

Spiced fillings in glassine-lined bags

Three varieties of spiced fillings for bakery sweet foods are packed in 100 pound glassine-lined, multiwall paper bags. Color of broad horizontal stripe indicates variety: orange for Cinnaquik, a prepared Saigon cinnamon filling; yellow, for a concentrated form of Cinnaquik; and blue for Knickerbocker's Kuchen filling, a coffee cake flavoring.

The spiced fillings are specialties of Knickerbocker Mills Company, 610 W. 26th St., N.Y. 1, N.Y.

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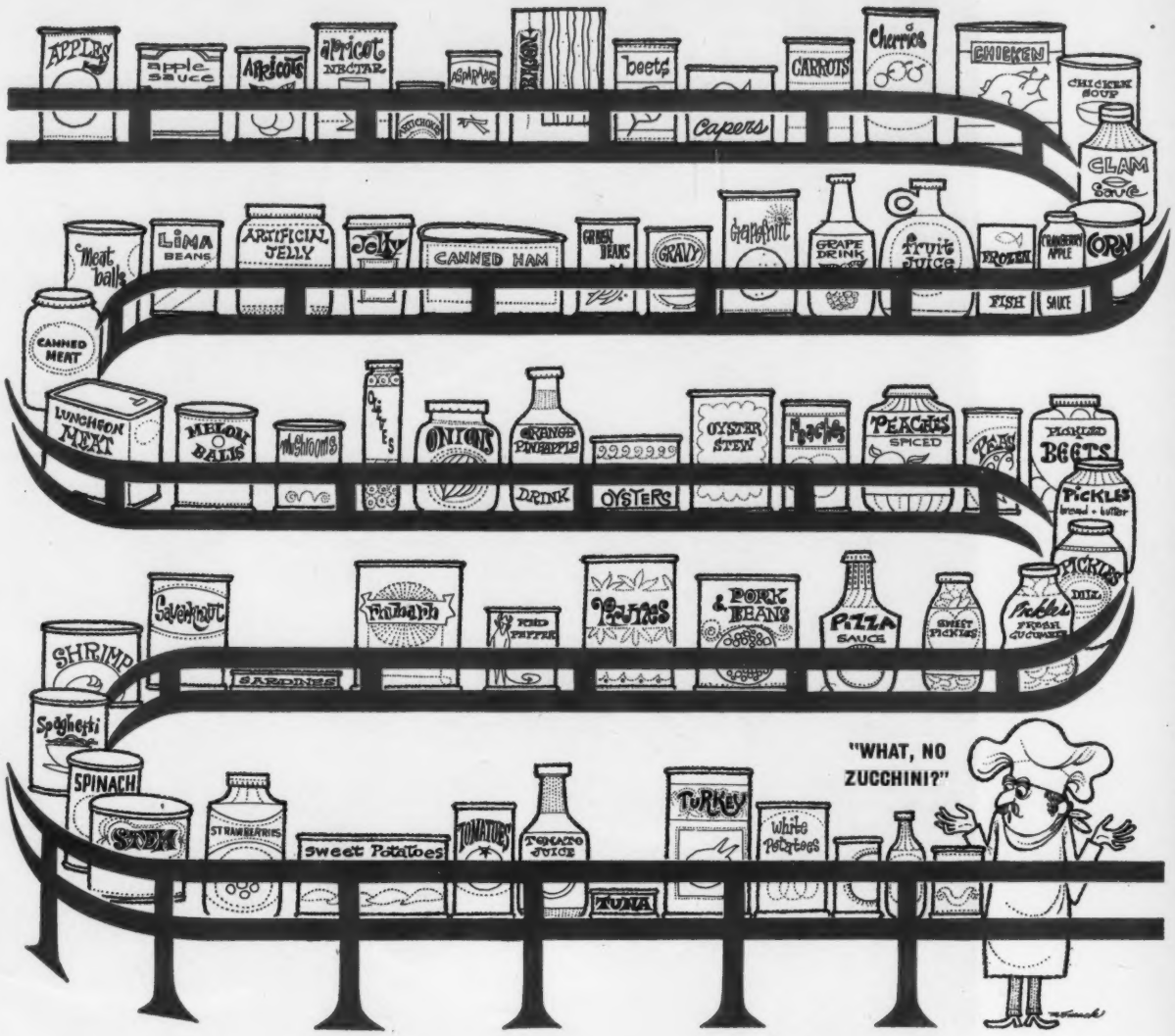
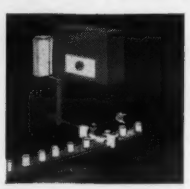


NEW MORTON FLOCRON DISPENSER CUTS CANNING COSTS FOR 63 PRODUCTS!



No splash . . . no spill . . . no overfill! Companies who use Morton's amazing Flocron liquid dispenser system to handle any of the 63 different food products listed above report that Flocron avoids the waste inherent in "overflow fill" systems, stops splash loss, and dispenses more than 40 different ingredients with money-saving speed and accuracy.

The versatile Flocron is actually a precise electronic system with photoelectric circuits in a sealed unit and a new lever-type photo switch to activate dispensing. It assures accuracy, even on lines handling up to 300 units per minute! Remote electronic controls permit you to "dial" the exact amount of liquid required for varying can sizes.

Designed for efficient, low cost operation. The Flocron is made of stainless steel and plastic and is constructed to avoid corrosion and lengthy breakdowns that result in costly downtime. There are no valves to stick or clog, and the Flocron is easily cleaned by circulating a detergent solution through the fluid system and following this with a sanitizer. No need to revise production lines. The Flocron can be operated with existing equipment. Scientific Dispensing Company technicians in all areas will assist with installation and servicing.

Some of the liquids you can dispense with the Flocron are: ascorbic acid, beef gravy, brine, concentrated syrup, hot butter, Monosodium Glutamate, spice oils, sugar and brine, tomato puree and vinegar.

MORTON ALSO OFFERS CORROSION-FREE BRINEMAKERS

In addition to the Flocron liquid dispenser, Morton also offers a complete range of Brinemakers, capable of producing up to 800 gals. of saturated pure brine per hour. With the Morton Brinemaker, salt is handled only once at the Brinemaker location from where it may flow or be pumped to the Flocron or other usage points. No space-wasting storage tank needed; no need for costly shut downs for cleaning out impurities.

SCIENTIFIC DISPENSING COMPANY / DIVISION OF

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What will the foods of the future be like ?

PFIZER PRODUCTS FOR THE FOOD INDUSTRY
MILLING & BAKING
Bi-Cap® (flour enrichment mixtures), L-Lysine, Glucono-Delta-Lactone, Cream of Tartaric Acid, Citric Acid, Sorbistat®, (Sorbic Acid), Sorbistat®-K (Potassium Sorbate), Sodium Benzoate, B Vitamins, Sof-U-Pak
DESSERT
Citric Acid, Ascorbic Acid, Sodium Citrate, Fumaric Acid, Calcium Cyclamate, Calcium Gluconate, Sorbistat® (Sorbic Acid), Sorbistat®-K (Potassium Sorbate)
CANDY
Citric Acid, Ascorbic Acid, Calcium Cyclamate, Tartaric Acid, Cream of Tartar, Sorbistat® (Sorbic Acid)
FROZEN FOOD
Citric Acid, Ascorbic Acid, A-C-M
MEAT PACKING
Citric Acid, Ascorbic Acid, Erythorbic Acid (Isoascorbic Acid), Sodium Erythorbate (Sodium Isoascorbate), Sodium Ascorbate, Biostat®-PA (Oxytetracycline), Sodium Citrate
DAIRY
Citric Acid, Sodium Citrate, Vitamin A, Sorbistat®-K (Sorbic Acid), Sorbistat®-K (Potassium Sorbate), Vitamin A Palmitate, Types M & W
OIL & FAT PRODUCTS
Vitamin A & D, Beta Carotene, Citric Acid, Sodium Benzoate
CANNING PRESERVING
Citric Acid, Ascorbic Acid, Sodium Citrate, Calcium Cyclamate, Sodium Benzoate, Tartaric Acid
BEVERAGE
Citric Acid, Ascorbic Acid, Sodium Citrate, Sorbistat®-K (Potassium Sorbate), Calcium Cyclamate, Sodium Benzoate, Tartaric Acid, Caffeine, Erythorbic Acid (Isoascorbic Acid)

Whatever the form or content of tomorrow's foods, they will owe something to the research laboratory of today. If you are working to develop new food products, or to improve present ones, the end to your search may be as close at hand as your Pfizer representative.

The name Pfizer has been synonymous with highest quality ingredients and service for the food industry for more than 110 years. This reputation results, in no small way, from the contributions of Pfizer Technical Service.

Our customers have come to rely on our many products and on our readily available technical service "team" at every stage of product development—from research to finished production.

For example, when manufacturers of "convenience" mixes—general-purpose and specialty baked goods—wanted a more controlled type of leavening action, Pfizer offered Glucono-Delta-Lactone. This chemical leavening acid imparts no unpleasant aftertaste, yet helps provide products having excellent volume and fine even texture. G-D-L's high stability in storage also insures longer shelf life.

Mold and yeast growth had been causing food-freshness problems in cheese, wines, prepared salads, and baked goods. Today, Pfizer Sorbistat®-K and Sorbistat® provide the means to ensure a "stay fresher longer" quality in such products.

In the nutritional area, Pfizer L-LYSINE has made possible great strides in improving the protein quality of grain-based foods ranging from breads to breakfast cereals . . . without affecting the taste or texture of the product. This essential amino acid "activates" the protein potential present, thus improving the total protein quality.

These few examples merely typify Pfizer's experience and willingness to help. Let us prove that our products and personnel can help solve your problems.

If you have a food product problem, look to Pfizer first.

Science for the world's well-being®

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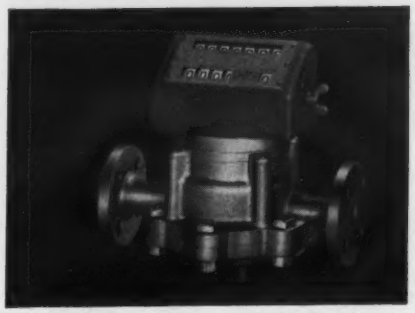
CHEMICAL DIVISION

Chas. Pfizer & Co., Inc.
Chemical Division
New York 17, N. Y.

NIAGARA METERS



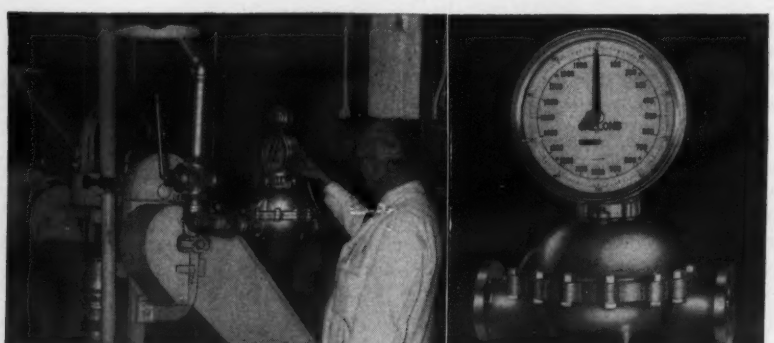
STAINLESS STEEL — Meters available in ¾" to 2½" size for liquid flows of 1 gpm to as high as 160 gpm. Internal parts of stainless steel or other corrosion resistant materials. Choice of registers and automatic control features.

Whatever liquids you use in plant operations — *whether they are acid or alkaline* — chances are there's a NIAGARA Meter specially designed to measure and control the flow . . . safely . . . accurately . . . with savings to you in time, material and labor.

Hundreds of plants—chemical, food, soap, paper, drug, textile — depend on NIAGARA Meters and accompanying automatic controls for batching and processing of more than 500 different liquids.

Leading companies in the Food Industry use NIAGARA meters in batching and processing operations to measure and control flow of liquid ingredients. Metering assures uniform quality, provides inventory controls, speeds operations, and reduces operating costs.

SIMPLIFY HANDLING AND CONTROL OF ALL LIQUID FOOD PRODUCTS



BRONZE or GALVANIZED IRON — Meters offer widest selection of measurement units and controls from ½" to 6" size. Handle flows of ½ gpm to 1000 gpm depending on viscosity and type of liquid. Working parts of bronze.

For Complete details, write for Bulletin 48

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SALES REPRESENTATIVES THROUGHOUT THE NATION

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GRAS List of 662 Flavors

Generally recognized as safe for their intended use according to latest report of the Expert Panel of the Flavoring Extract Manufacturers' Assn.

DR. RICHARD L. HALL
Chairman, Food Additives Committee
Flavoring Extract Manufacturers' Assn.

DR. BERNARD L. OSER
Consultant on Food Additives
Flavoring Extract Manufacturers' Assn.

THE FOLLOWING flavoring ingredients have been determined to be generally recognized as safe (GRAS) under conditions of intended use by the expert panel of the Flavoring Extract Manufacturers' Assn. (FEMA). This is the second such list issued by the FEMA, and includes those substances published in an earlier release.

The criteria employed by the panel, and the circumstances surrounding the construction of these lists, have been described in the previous release, and in papers presented before the Institute of Food Technologists.[1, 2]

In addition to the 662 ingredients here listed as GRAS, the decisions of the panel with respect to 130 others are being reserved pending evaluation of additional evidence. On 12 substances not previously announced as dropped from consideration, there has been so little information, or indication of commercial interest, that no conclusions were feasible. One hundred thirty-one (131) botanicals, essential oils, and extractives, which are not now on a Food and Drug Administration White List, could not be judged by the FEMA expert panel under the criteria they have employed.

The FEMA has applied for an additional extension on the foregoing substances which have not been established as GRAS, in order to provide time for their status to be resolved. Some require experimental investigation, or study of other types of information. Where such data are obtainable or worth acquiring, industry is being given an opportunity to support the necessary activity. In many of the remaining cases, the limited commercial value of the substance does not justify further concern; and unless the companies affected act independently, the ingredients involved will disappear from use as the extensions expire.

Expert Panel of the Flavoring Extract Manufacturers' Association

David W. Fassett, M.D., Laboratory of Industrial Medicine, Eastman Kodak Company, Rochester, New York

Horace W. Gerarde, Ph.D., M.D., Medical Research Division, Esso Research and Engineering Company, Linden, New Jersey

Maurice H. Seevers, Ph.D., M.D., Department of Pharmacology, University of Michigan Medical School, Ann Arbor, Michigan

Howard C. Spencer, Ph.D., Biochemical Research Laboratory, The Dow Chemical Company, Midland, Michigan

Jakob A. Stekol, Ph.D., Department of Physiological Chemistry and Nutrition, Institute for Cancer Research, Fox Chase, Philadelphia, Pennsylvania

Lauren A. Woods, Ph.D., M.D., Department of Pharmacology, College of Medicine, State University of Iowa, Iowa City, Iowa

[1]Hall, Richard L., "Recent Progress in the Consideration of Flavoring Ingredients Under the Fod Additives Amendment, I," Food Technology, 14, 488 (1960).

[2]Hall, Richard L., and Oser, Bernard L., "Recent Progress in the Consideration of Flavoring Ingredients Under the Food Additives Amendment, II," presented at the 21st Annual Meeting, Institute of Food Technologists, May 9, 1961 (to be published).

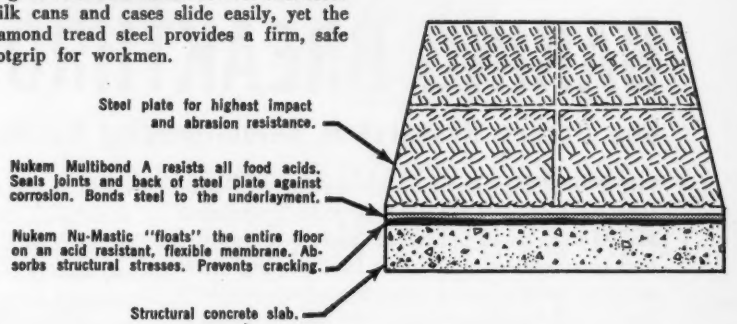
GRAS Flavors

Acetaldehyde
Acetic acid
Acetic acid, iso-amyl ester
Acetic acid, anisyl ester
Acetic acid, benzyl ester
Acetic acid, bornyl ester
Acetic acid, iso-bornyl ester
Acetic acid, butyl ester
Acetic acid, iso-butyl ester
Acetic acid, calcium salt
Acetic acid, carvyl ester
Acetic acid, cinnamyl ester
Acetic acid, citronellyl ester
Acetic acid, cyclohexaneethyl ester
Acetic acid, cyclohexyl ester
Acetic acid, decyl ester
Acetic acid, dihydrocarvyl ester
Acetic acid, alpha, alpha-dimethylphenethyl ester
Acetic acid, dodecyl ester (Laurel acetate)
Acetic acid, 2-ethyl butyl ester
Acetic acid, ethyl ester
Acetic acid, eugenyl ester
Acetic acid, iso-eugenyl ester
Acetic acid, furfuryl ester
Acetic acid, geranyl ester
Acetic acid, heptyl ester
Acetic acid, 2-hexenyl ester
Acetic acid, hexyl ester
Acetic acid, 1-hydroxy-3-nonanone ester
Acetic acid, isopropyl ester
Acetic acid, linalyl ester
Acetic acid, menthyl ester
Acetic acid, alpha-methylbenzyl ester
Acetic acid, methyl ester
Acetic acid, 2-methyl-4-phenyl-2-butyl ester
Acetic acid, neryl ester
Acetic acid, 1, 3-nonanediol mixed esters
Acetic acid, nonyl ester
Acetic acid, octyl ester
Acetic acid, phenethyl ester
Acetic acid, 4-phenyl-2-butanol ester
Acetic acid, phenylpropyl ester
Acetic acid, piperonyl ester
Acetic acid, potassium salt
Acetic acid, propyl ester
Acetic acid, iso-pulegol ester
Acetic acid, rhodinyl ester
Acetic acid, santalyl ester
Acetic acid, sodium salt
Acetic acid, terpinyl ester
Acetic acid, tetrahydrofurfuryl ester
Acetic acid, o-tolyl ester
Acetic acid, p-tolyl ester
Acetic acid, 10-undecene-1-ol ester
Acetic acid, vanillin ester
(tri-) Acetin
Acetoacetic acid, benzyl ester
Acetoacetic acid, butyl ester
Acetoacetic acid, iso-butyl ester
Acetoacetic acid, ethyl ester
Acetoacetic acid, geranyl ester
Acetoin
Acetophenone
Acetylcitric acid, tributyl ester
2-Acetyl-3-phenylpropionic acid, ethyl ester
Aconitic acid
Aconitic acid, mixed ethyl esters
Acrylic acid, ethyl ester
Adipic acid
Alginates, sodium, calcium and ammonium
Allyl isothiocyanate
4-Allylveratrole (Eugenyl methyl ether)
Amyl alcohol
iso-Amyl alcohol
Anethole
Angelic acid, iso-butyl ester
Anisaldehyde
Anisic acid, ethyl ester
Anisic acid, methyl ester
Anisole
Anisyl alcohol
Anthranilic acid, allyl ester
Anthranilic acid, butyl ester
Anthranilic acid, iso-butyl ester
Anthranilic acid, cinnamyl ester
Anthranilic acid, cyclohexyl ester
Anthranilic acid, ethyl ester
Anthranilic acid, linalyl ester
Anthranilic acid, methyl ester
Anthranilic acid, phenethyl ester
Anthranilic acid, terpinyl ester
Ascorbic acid
Benzaldehyde
Benzoic acid
Benzoic acid, iso-amyl ester
Benzoic acid, benzyl ester
Benzoic acid, iso-butyl ester
Benzoic acid, ethyl ester
Benzoic acid, eugenyl ester
Benzoic acid, geranyl ester
Benzoic acid, isopropyl ester
Benzoic acid, linalyl ester
Benzoic acid, methyl ester
Benzoic acid, phenethyl ester
Benzoic acid, propyl ester
Benzoic acid, sodium salt
Benzoin
Benzophenone
Benzoylacetic acid, ethyl ester
Benzyl alochol
3-Benzyl-4-heptanone
Borneol
iso-Borneol
Brominated vegetable oils
1-Butanol
2-Butanone
Butter acids*
Butter, esters**
iso-Butyl alcohol
Butylated hydroxyanisole (BHA)
Butylated hydroxytoluene (BHT)
alpha-iso-Butylphenethyl alcohol
p-ter-Butylphenylacetic acid, methyl ester
Butyraldehyde
iso-Butyraldehyde
Butyric acid
iso-Butyric acid
Butyric acid, allyl ester
Butyric acid, amyl ester
Butyric acid, iso-amyl ester
Butyric acid, anisyl ester
Butyric acid, benzyl ester
iso-Butyric acid, benzyl ester
Butyric acid, butyl ester
Butyric acid, iso-butyl ester
iso-Butyric acid, butyl ester
iso-Butyric acid, iso-butyl ester
Butyric acid, cinnamyl ester
iso-Butyric acid, cinnamyl ester
Butyric acid, citronellyl ester
iso-Butyric acid, citronellyl ester
Butyric acid, cyclohexyl ester
Butyric acid, decyl ester
iso-Butyric acid, alpha, alpha-dimethylbenzyl ester
Butyric acid, alpha, alpha-dimethylphenethyl ester
Butyric acid, alpha-ethylbenzyl ester
Butyric acid, ethyl ester
iso-Butyric acid, alpha, alpha-dimethyl-
Butyric acid, geranyl ester
iso-Butyric acid, geranyl ester
Butyric acid, heptyl ester
iso-Butyric acid, heptyl ester
Butyric acid, hexyl ester
Butyric acid, isopropyl ester
iso-Butyric acid, isopropyl ester
Butyric acid, linalyl ester
iso-Butyric acid, linalyl ester
Butyric acid, alpha-methylbenzyl ester
Butyric acid, methyl ester
iso-Butyric acid, methyl ester
iso-Butyric acid, 2-methyl-4-phenyl-2-butanol ester
Butyric acid, 2-methyl-2-propen-1-ol ester
Butyric acid, neryl ester
iso-Butyric acid, neryl ester
Butyric acid, octyl ester
iso-Butyric acid, octyl ester
Butyric acid, phenethyl ester
iso-Butyric acid, phenethyl ester
iso-Butyric acid, 2-phenoxyethyl ester
Butyric acid, 2-phenylpropyl ester
iso-Butyric acid, 3-phenylpropyl ester
iso-Butyric acid, piperonyl ester
Butyric acid, propyl ester
iso-Butyric acid, propyl ester
Butyric acid, rhodinyl ester

*Assuming that these are a mixture consisting only of the saponified acids reported in the literature as derived from butter in the approximate proportions normally occurring.
**Assuming that these are the ethyl esters of butter acids (q.v.).

This Nukem steel plate floor is structurally strong to withstand severe impact of full milk cans as well as constant structural movement that results from temperature changes. Since it is laid in chemical-proof Nukem Multi-Bond cement, this floor will never corrode, will not allow bacteria or fungi to form and will be forever odor-free! Milk cans and cases slide easily, yet the diamond tread steel provides a firm, safe footgrip for workmen.

Nukem steel plate floors give trouble-free service, year after year after year. Nukem pioneered this type of floor and continues to produce the most dependable construction materials.


Steel plate for highest impact and abrasion resistance.
Nukem Multibond A resists all food acids. Seals joints and back of steel plate against corrosion. Bonds steel to the underlayment.
Nukem Nu-Mastic "floats" the entire floor on an acid resistant, flexible membrane. Absorbs structural stresses. Prevents cracking.
Structural concrete slab.

Your industry—your plant—has its own individual operating conditions which may be absolutely unique. Whatever your problem, Nukem can design a floor to provide the best possible protection.

Service is not confined to milk plants. Whether you need a steel plate floor . . . an acid-proof brick or tile floor . . . Nukem can engineer it and supply the proper construction materials.

Your Nukem floor will be the most satisfactory installation you can buy for years of maintenance-free service! Write today for technical data.

Amercoat CORPORATION

Dept. TW, 4809 Firestone Blvd.
South Gate, California

921 Pitner Ave. Evanston, Ill.
360 Carnegie Ave. Kenilworth, N.J.
111 Colgate Ave. Buffalo, N.Y.
2404 Dennis St. Jacksonville, Fla.
6530 Supply Row Houston, Tex.

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BAKING BREAKTHROUGH *Fluid Flex Style*

How Durkee Research is Revolutionizing Baking with a Fluid Shortening

THE PROBLEM: *Develop a superior emulsified shortening to meet the needs of today's wholesale bakeries.* As more and more large scale bakeries turn to automated production facilities, ingredient suppliers must adapt or develop products expressly for the bulk handling systems such facilities require. Durkee, long a supplier of emulsified shortenings to the bakery industry, turned to its Technical Service Staff to meet this challenge.

THE SOLUTION: *Liquefy, Emulsify, Infuse:* Producing emulsifiers for over 20 years, Durkee knew what potential baking improvements lay waiting the development of a workable combination of emulsifiers and oil in one pourable, pumpable fluid product . . . a product built for automated bulk handling systems. Using developmental and production procedures learned through those years of experience, Durkee perfected a method of infusing microscopic crystals of a unique emulsifier into a top quality liquid oil that produces lighter, finer textured baked goods with longer shelf life. We named this new shortening FLUID FLEX.

THE SIGNIFICANCE: *Revolutionary.* Here again, Durkee's technical competence in the fields of fats and oils led to an entirely new concept of production for an entire industry *before* the industry knew it could be done. Purposeful research is continually in progress at Durkee. Here is where we may be able to help you most whenever your product or process warrants further attention. We'd be glad to help. Just phone or write.

DURKEE TECHNICAL SERVICE

Department FP • 900 Union Commerce Building • Cleveland 14, Ohio
Jamaica, N. Y. • Louisville, Ky. • Berkeley, Calif. • Chicago, Ill.

Glidden QUALITY PRODUCTS

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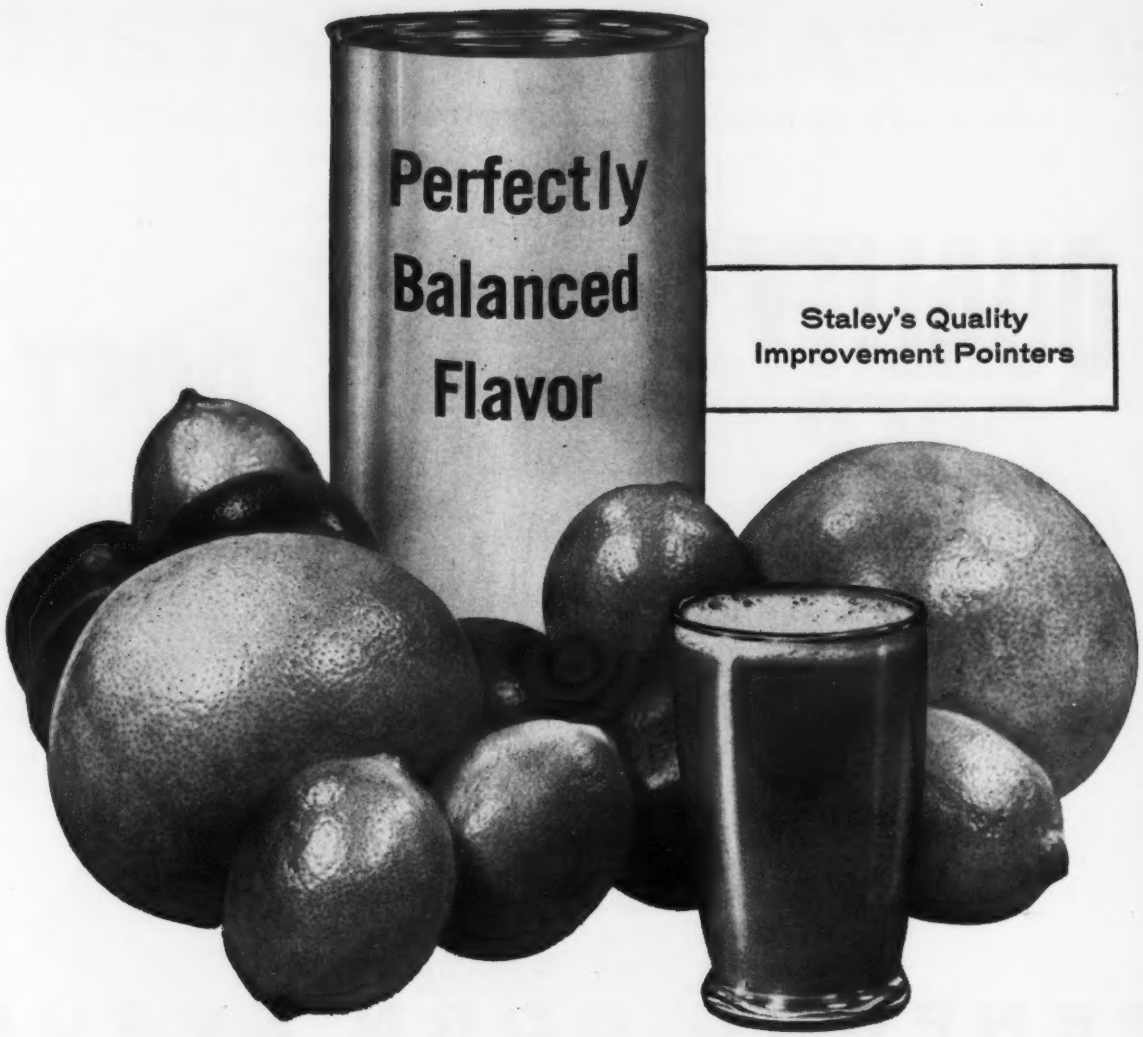
ingredients

iso-Butyric acid, rhodinyl ester
Butyric acid, terpinyl ester
iso-Butyric acid, terpinyl ester
Butyric acid, tetrahydrofurfuryl ester
iso-Butyric acid, p-tolyl ester
(tri-) Butyrin
Butyryllactic acid, butyl ester
Caffeine
Camphene
d-Camphor
Caramel color
Carboxymethylcellulose
Carvacrol
Carveol
4-Carvomenthenol
Carvone
beta-Caryophyllene
Cinnamaldehyde
Cinnamic acid
Cinnamic acid, allyl ester
Cinnamic acid, iso-amyl ester
Cinnamic acid, benzyl ester
Cinnamic acid, butyl ester
Cinnamic acid, iso-butyl ester
Cinnamic acid, cinnamyl ester
Cinnamic acid, cyclohexyl ester
Cinnamic acid, ethyl ester
Cinnamic acid, heptyl ester
Cinnamic acid, isopropyl ester
Cinnamic acid, linalyl ester
Cinnamic acid, methyl ester
Cinnamic acid, phenethyl ester
Cinnamic acid, 3-phenylpropyl ester
Cinnamic acid, propyl ester
Cinnamic acid, terpinyl ester
Cinnamyl alcohol
Citral
Citric acid
Citric acid, sodium salt
Citric acid, triethyl ester
Citronellal
d-Citronellol
l-Citronellol
Citronellyloxyacetaldehyde
p-Cresol
Crotonic acid, allyl ester
Cuminaldehyde
Cyclohexaneacetic acid
Cyclohexaneacetic acid, allyl ester
Cyclohexanebutyric acid, allyl ester
Cyclohexanehexanoic acid, allyl ester
Cyclohexanepropionic acid, allyl ester
Cyclohexanepropionic acid, ethyl ester
Cyclohexanevaleric acid, allyl ester
p-Cymene
d-Decalactone
Decanal
Decanoic acid
Decanoic acid, ethyl ester
1-Decanol
2-Decen-1-al
2-Decenoic acid, butyl ester
Diacetyl
Diallyl disulfide
Diallyl sulfide
Dibutyl sulfide
Dihydrocarveol
p-Dimethoxybenzene
2,4-Dimethyl acetophenone
2,3-Dimethylcrotonic acid, benzyl ester
2,6-Dimethyl-5-heptenal
2,6-Dimethyl octanal
3,7-Dimethyl-1-octanol
alpha, alpha-Dimethylphenethyl alcohol
Dimethyl sulfide
1,3-Diphenyl-2-propanone
d-Dodecalactone
Dodecanal (Lauraldehyde)
Dodecanoic acid (Lauric acid)
Dodecanoic acid, iso-amyl ester (iso-Amyl laurate)
Dodecanoic acid, butyl ester (Butyl laurate)
Dodecanoic acid, ethyl ester (Ethyl laurate)
Dodecanoic acid, methyl ester (Methyl laurate)
Dodecanoic acid, p-tolyl ester (p-Cresyl laurate)
1-Dodecanol (Lauryl alcohol)
2-Dodecenal
Draco rubin, extract
Erythorbic acid (iso-Ascorbic acid)
Estragole (p-Allylanisole)
Ethanol
6-Ethoxy-m-anol (Propenyl guaethol)
p-Ethoxy benzaldehyde
2-Ethoxy-p-cymene

(Carvacryl ethyl ether)
2-Ethoxy-5-propenylanisole
(iso-Eugenyl ethyl ether)
2-Ethylbutyraldehyde
2-Ethylbutyric acid
2-Ethylbutyric acid, allyl ester
Ethylene oxide***
4-Ethylguaiacol
2-Ethyl-2-heptenal
Ethyl nitrite
Ethyl vanillin
Eucalyptol
Eugenol
iso-Eugenol
Farnesol
d-Fenchone
Fenchyl alcohol
Formic acid
Formic acid, amyl ester
Formic acid, iso-amyl ester
Formic acid, anisyl ester
Formic acid, benzyl ester
Formic acid, bornyl ester
Formic acid, iso-bornyl ester
Formic acid, butyl ester
Formic acid, iso-butyl ester
Formic acid, cinnamyl ester
Formic acid, citronellyl ester
Formic acid, cyclohexyl ester
Formic acid, alpha, alpha-dimethylphenethyl ester
Formic acid, ethyl ester
Formic acid, eugenyl ester
Formic acid, iso-eugenyl ester
Formic acid, geranyl ester
Formic acid, heptyl ester
Formic acid, hexyl ester
Formic acid, isopropyl ester
Formic acid, linalyl ester
Formic acid, alpha-methylbenzyl ester
Formic acid, neryl ester
Formic acid, octyl ester
Formic acid, penethyl ester
Formic acid, 3-phenylpropyl ester
Formic acid, propyl ester
Formic acid, rhodinyl ester
Formic acid, terpinyl ester
Fumaric acid
2-Furanacrylic acid, propyl ester
2-Furanbutyric acid, iso-amyl ester
2-Furanmethanethiol
(Furfuryl mercaptan)
2-Furanpropionic acid, iso-amyl ester
2-Furanpropionic acid, iso-butyl ester
2-Furanpropionic acid, ethyl ester
Furfural
Furfuryl alcohol
Furoic acid, allyl ester
Furoic acid, amyl ester
Furoic acid, hexyl ester
Furoic acid, methyl ester
Furoic acid, phenethyl ester
Furoic acid, propyl ester
Furyl acrolein
1-Furyl-2-propanone
Fusel, oil, refined†
Gallic acid, propyl ester
(Propyl gallate)
Geraniol
Glucose pentaacetate
Glycerol
Glycyrrhizin, ammoniated
Guaiac gum, extract
Guaiacol
Guar, gum
Heptanal
2,3-Heptanedione
Heptanoic acid, allyl ester
Heptanoic acid, amyl ester
Heptanoic acid, butyl ester
Heptanoic acid, iso-butyl ester
Heptanoic acid, ethyl ester
Heptanoic acid, methyl ester
Heptanoic acid, octyl ester
Heptanoic acid, propyl ester
1-Heptanol
2-Heptanone
3-Heptanone
4-Heptanone
Hexadecanoic acid
(Palmitic acid)
Hexadecanoic acid, ethyl ester
(Ethyl palmitate)

***As a fumigant for whole and ground spices, provided that residues of ethylene oxide do not exceed 50 p.p.m.
†Assuming that refined fusel oil is mixed amyl alcohols, predominantly 3-Methyl-1-butanol.



Sweetose Syrup Enhances Natural Flavor... Brightens Appearance in Fruit Juice Drinks!

In jams and jellies . . . Sweetose brings out true fruit flavor. Gives a brighter appearance and sheen.

In canned fruit sauces . . . Sweetose holds appetizing color. Enhances that just-picked flavor with balanced sweetness.

There's no surer, more economical way to improve quality, appearance and flavor in your fruit juice drinks than with Sweetose, Staley's enzyme-converted corn syrup.

Crystal-clear Sweetose assures true *balanced sweetness*. Captures, blends and enhances the various tangy, natural flavors. Holds and brightens true fruit colors.

Investigate the many advantages Sweetose Syrup can bring to your operation. For more information on how you can improve the over-all quality of your fruit juice drinks at *decidedly lower* sweetener costs, see your Staley Representative or write:

A. E. Staley Mfg. Co., Decatur, Ill.

BRANCH OFFICES: ATLANTA • BOSTON • CHICAGO • CLEVELAND • KANSAS CITY • NEW YORK • PHILADELPHIA • SAN FRANCISCO • ST. LOUIS

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QUALITY GOES UP

COST COMES DOWN

WHEN YOU SWITCH TO

PENFORD CORN SYRUP

There are so many reasons why you are better off with a liquid corn syrup system... and best off with Penford Corn Syrup! Our technical service representative can prove every point on this quick checklist—and tell you other advantages too:

Penford Corn Syrup is convenient to use, adapts to automation

- *Can be proportioned accurately*
- *Simplifies mixing*
- *Lends itself to automation*
- *Improves plant appearance and sanitation*

Penford Corn Syrup improves the quality of your product

- *Enhances natural flavors*
- *Controls sweetness*
- *Aids in developing body and texture*
- *Stabilizes color*

Penford Corn Syrup saves money over a dry system

- *Reduces cost per hundredweight of sweetener solids*
- *Reduces man hours*
- *Saves handling equipment*
- *Saves with tank storage*

Whether your business is candy, canning, frozen desserts, baking or meat packing—there's a Penford Corn Syrup to suit your needs. Why not let one of our technical representatives come to your plant to demonstrate its advantages from your particular point of view? Call or write any P & F office for prompt action.

Penick & Ford

PENICK & FORD, LTD.
INCORPORATED

750 THIRD AVENUE, NEW YORK 17, N. Y.; 1531 MARIETTA BLVD., ATLANTA, GA.; CEDAR RAPIDS, IOWA; 333 MARKET ST., SAN FRANCISCO 5, CALIF.

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ingredients

1-Hexadecanol (Cetyl alcohol)
Hexanal
2,3-Hexanedione
Hexanoic acid
Hexanoic acid, allyl ester
Hexanoic acid, amyl ester
Hexanoic acid, iso-amyl ester
Hexanoic acid, butyl ester
Hexanoic acid, iso-butyl ester
Hexanoic acid, ethyl ester
Hexanoic acid, geranyl ester
Hexanoic acid, hexyl ester
Hexanoic acid, isopropyl ester
Hexanoic acid, linalyl ester
Hexanoic acid, methyl ester
Hexanoic acid, 3-phenylpropyl ester
Hexanoic acid, propyl ester
1-Hexanol
2-Hexenal
2-Hexenoic acid, methyl ester
2-Hexen-1-ol
3-Hexen-1-ol
p-Hydroxybenzoic acid, butyl ester
p-Hydroxybenzoic acid, methyl ester
p-Hydroxybenzoic acid, propyl ester
Hydroxycitronellal
Hydroxycitronnelol
3-Hydroxy-2-methyl-alpha-pyrone (Maltol)
5-Hydroxy-4-octanone
4-(p-Hydroxyphenyl)-2-butanone
Indole
p-Isopropyl acetophenone
Isopropyl alcohol
p-Isopropylbenzyl alcohol
3-(p-Isopropyl)phenyl propionaldehyde
Lactic acid
Lactic acid, butyl ester
Lactic acid, ethyl ester
Levulinic acid
Levulinic acid, butyl ester
Levulinic acid, ethyl ester
d-Limonene
Linalool
l-Malic acid
Malic acid, diethyl ester
1,8-p-Menthadien-7-ol
Menthol
(d)-neo-Menthol
Menthone
Methanethiol (Methyl mercaptan)
beta-Methiopropionaldehyde (Methional)
beta-Methiopropionic acid, methyl ester
4'-Methoxyacetophenone
2-Methoxy-4-methyl phenol
4-(p-Methoxyphenyl)-2-butanone
1-p-Methoxyphenyl-2-propanone
2-Methoxy-4-vinyl phenol
p-Methyl acetophenone
o-Methylanisole
p-Methylanisole
alpha-Methylbenzyl alcohol
2-Methylbutyraldehyde
3-Methylbutyraldehyde
Methyl cellulose
alpha-Methylcinnamaldehyde
3-Methylcyclopentane-1,2-dione
5-Methylfurfural
2-Methylheptanoic acid
6-Methyl-5-hepten-2-one
2-Methyl-3-(p-isopropylphenyl) butanal
2-Methyloctanal
4-Methyl-2,3-pentanedione
2-Methylpentanoic acid
4-Methylpentanoic acid, methyl ester
4-Methyl-2-pentanone
beta-Methylphenethyl alcohol (Hydratropyl alcohol)
p-Methylphenylacetaldehyde
3-Methyl-2-phenylbutyraldehyde
5-Methyl-1-phenyl-2-pentanone
Monosodium glutamate
Myrcene
Nerol
Nerolidol
2,6-Nonadienol
Nonanal
Nonanoic acid
Nonanoic acid, allyl ester
Nonanoic acid, iso-amyl ester
Nonanoic acid, ethyl ester
Nonanoic acid, methyl ester
1-Nonanol
2-Nonanone
2-Nonenoic acid, methyl ester
Octadecanoic acid
Octadecanoic acid, butyl ester
Octadecanoic acid, glyceryl monoester
Octadecanoic acid, propylene glycol monoester

Octanal
Octanoic acid
Octanoic acid, allyl ester
Octanoic acid, amyl ester
Octanoic acid, iso-amyl ester
Octanoic acid, ethyl ester
Octanoic acid, heptyl ester
Octanoic acid, hexyl ester
Octanoic acid, linalyl ester
Octanoic acid, methyl ester
Octanoic acid, nonyl ester
Octanoic acid, octyl ester
1-Octanol
2-Octanol
3-Octanol
2-Octanone
3-Octanone
3-Octanon-1-ol
Oleic acid
Oleic acid, ethyl ester
Oleic acid, glyceryl monoester
Pentanal
2,3-Pentanedione
2-Pentanone
4-Pentenoic acid
alpha-Phellandrene
Phenethyl alcohol
Phenoxyacetic acid
Phenoxyacetic acid, allyl ester
Phenylacetaldehyde
Phenylacetic acid
Phenylacetic acid, allyl ester
Phenylacetic acid, iso-amyl ester
Phenylacetic acid, benzyl ester
Phenylacetic acid, butyl ester
Phenylacetic acid, iso-butyl ester
Phenylacetic acid, cinnamyl ester
Phenylacetic acid, citronellyl ester
Phenylacetic acid, ethyl ester
Phenylacetic acid, iso-eugenyl ester
Phenylacetic acid, geranyl ester
Phenylacetic acid, guaiacyl ester
Phenylacetic acid, isopropyl ester
Phenylacetic acid, methyl ester
Phenylacetic acid, octyl ester
Phenylacetic acid, phenethyl ester
Phenylacetic acid, propyl ester
Phenylacetic acid, rhodinyl ester
Phenylacetic acid, santalyl ester
Phenylacetic acid, p-tolyl ester
4-Phenyl-2-butanol
4-Phenyl-3-buten-2-ol
4-Phenylbutyric acid, ethyl ester
4-Phenylbutyric acid, methyl ester
1-Phenyl-3-methyl-3-pentanol
1-Phenyl-1-propanol
3-Phenyl-1-propanol
2-Phenylpropionaldehyde (Hydratropaldehyde)
3-Phenylpropionaldehyde
3-Phenylpropionic acid
3-Phenylpropionic acid, ethyl ester
3-Phenylpropionic acid, methyl ester
o-Phosphoric acid
o-Phosphoric acid, disodium salt
o-Phosphoric acid, tricalcium salt
alpha-Pinene
beta-Pinene
Piperidine
Piperine
d-Piperitone
Piperonal
Polyoxyethylene (20) sorbitan monolaurate (Tween 20)
Polyoxyethylene (20) sorbitan monooleate (Tween 80)
Polyoxyethylene (20) sorbitan monostearate (Tween 60)
1-Propanol
2-Propene-1-thiol (Allyl mercaptan)
4-Propenylveratrole (iso-Eugenyl methyl ether)
Propionaldehyde
Propionic acid
Propionic acid, allyl ester
Propionic acid, iso-amyl ester
Propionic acid, anisyl ester
Propionic acid, benzyl ester
Propionic acid, iso-bornyl ester
Propionic acid, butyl ester
Propionic acid, iso-butyl ester
Propionic acid, carvyl ester
Propionic acid, cinnamyl ester
Propionic acid, citronellyl ester
Propionic acid, cyclohexyl ester
Propionic acid, decyl ester
Propionic acid, ethyl ester
Propionic acid, geranyl ester
Propionic acid, hexyl ester

INSTANT CLEARJEL®

STABILIZER FOR FROZEN AND READY BAKED PIES

eliminates oven boil-out

INSTANT CLEARJEL is a special stabilizer for fruit pie fillings that is unaffected by freezing, thawing and reheating. Resists viscosity breakdown that causes oven boil-out and gumminess. Retains exceptional clarity, sparkling color and smooth texture from baking to eating.

INSTANT CLEARJEL thickens fruit pie fillings—instantly! Eliminates the prolonged stirring and cooking in steam kettles that cause fruit breakup. Handles whole fruits and slices gently.

INSTANT CLEARJEL reduces preparation time to a matter of minutes. Usual procedure: Mix dry ingredients. Add water or juice. Agitate. Fold in fruit and bake. Saves time, labor, fuel.

INSTANT CLEARJEL offers all the modern-day advantages of instant thickening. Why not bake a test pie? We'll gladly send a sample, more information and suggested formulas.

AVAILABLE FROM YOUR BAKERY SUPPLY HOUSE

National STARCHES

NATIONAL STARCH and CHEMICAL CORPORATION

750 Third Avenue, New York 17 • 3641 So. Washtenaw Avenue, Chicago 32 • 735 Battery Street, San Francisco 11

And All Principal Cities in the United States, Canada, England and Mexico

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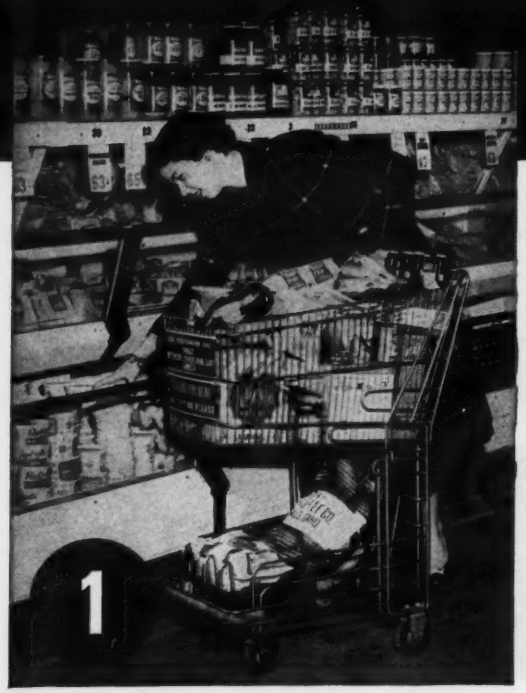
HERCULES

"BEEF-UP" YOUR REPEAT SALES WITH HVP-CENTURY



The initial sale is important but volume is built on repeats. That's why so many food processors are including Hercules HVP®-Century powdered in their formulations for the flavor of well-browned beef. It's a flavor that brings satisfied customers back to the counter again for "seconds."

HVP-Century, a total hydrolyzed vegetable protein derived from wheat protein, contains 100% of all the amino acids derived from the hydrolysis with none of the monosodium glutamate removed.

The latest addition to Hercules' full life of HVP powder and liquids and MSG, HVP-Century offers many possibilities for cost savings and processing advantages.

A four-page data sheet is available to provide complete specifications on HVP-Century as well as information on how to compute cost savings and convert formulations. A data sheet and a sample of HVP-Century, which has FDA acceptance for use in many applications, can be obtained by writing:

Huron Milling Division, Virginia Cellulose Department
HERCULES POWDER COMPANY
INCORPORATED
Hercules Tower, 910 Market Street, Wilmington 99, Delaware

VH60-7

7255 on Reader Service Slip.

ingredients

Propionic acid, isopropyl ester
Propionic acid, linalyl ester
Propionic acid, alpha-methylbenzyl ester
Propionic acid, methyl ester
Propionic acid, neryl ester
Propionic acid, octyl ester
Propionic acid, phenethyl ester
Propionic acid, 3-phenylpropyl ester
Propionic acid, propyl ester
Propionic acid, rhodinyl ester
Propionic acid, terpinyl ester
Propionic acid, tetrahydrofurfuryl ester
p-Propyl anisole
Propylene glycol
Propylene glycol alginate
alpha-Propylphenethyl alcohol
iso-Pulegol
Pulegone
iso-Pulegone
Pyridine
Pyruvaldehyde
Pyruvic acid
Pyruvic acid, iso-amyl ester
Pyruvic acid, ethyl ester
Quinine bisulfate
Quinine hydrochloride
Quinine sulfate
iso-Quinoline
Rhodinol
Saccharine, sodium salt
Salicylaldehyde
Salicylic acid, iso-amyl ester
Salicylic acid, benzyl ester
Salicylic acid, iso-butyl ester
Salicylic acid, ethyl ester
Salicylic acid, methyl ester
Salicylic acid, phenethyl ester
Santalol
Sarsaparilla, extract‡
Sebacic acid, dibutyl ester
Sebacic acid, diethyl ester
Skatole
Sodium hexametaphosphate
Sorbic acid, allyl ester
Sorbic acid, ethyl ester
Sorbic acid, potassium salt
Sorbitan monostearate (Span 60)
Sorbitol
Succinic acid, diethyl ester
Succinic acid, dimethyl ester
Sucrose octaacetate
Sulfur dioxide
Tannic acid
Tartaric acid
Tartaric acid, diethyl ester
alpha-Terpineol
Terpinolene
Tetradecanal (Myristaldehyde)
Tetradecanoic acid (Myristic acid)
Tetradecanoic acid, ethyl ester
Tetradecanoic acid, methyl ester
Tetrahydrofurfuryl alcohol
Tetrahydro-psi-ionone
Tetrahydrolinalool
Thienyl thiol
Thymol
Tiglic acid, ethyl ester
Tiglic acid, phenethyl ester
p-Tolualdehyde
alpha-Toluenethiol
(Benzyl mercaptan)
4-(p-Tolyl)-2-butanone
2-(p-Tolyl)propanal
2-Tridecenal
2,3-Undecadione
Undecanal
1-Undecanol
2-Undecanone
9-Undecenal
10-Undecenal
10-Undecenoic acid, allyl ester
10-Undecenoic acid, butyl ester
10-Undecylenic acid, ethyl ester
9-Undecylenic acid, methyl ester
Valeric acid
iso-Valeric acid
iso-Valeric acid, allyl ester
iso-Valeric acid, ammonium salt
iso-Valeric acid, iso-amyl ester
iso-Valeric acid, benzyl ester
Valeric acid, bornyl ester
iso-Valeric acid, bornyl ester
iso-Valeric acid, iso-bornyl ester
Valeric acid, butyl ester
iso-Valeric acid, butyl ester
iso-Valeric acid, cinnamyl ester
Valeric acid, citronellyl ester
iso-Valeric acid, cyclohexyl ester

‡Judged solely on the basis of common use.

Valeric acid, ethyl ester
iso-Valeric acid, ethyl ester
iso-Valeric acid, geranyl ester
iso-Valeric acid, isopropyl ester
iso-Valeric acid, linalyl ester
iso-Valeric acid menthyl ester
Valeric acid, methyl ester
iso-Valeric acid, methyl ester
iso-Valeric acid, neryl ester
iso-Valeric acid, nonyl ester
iso-Valeric acid, octyl ester
iso-Valeric acid, phenethyl ester
iso-Valeric acid, 3-phenylpropyl ester
iso-Valeric acid, propyl ester
iso-Valeric acid, rhodinyl ester
iso-Valeric acid, terpinyl ester
Vanillin
Veratraldehyde
(Vanillin methyl ether)
Yucca brevifolia, extract
Yucca mohavensis, extract
Zingerone
June 30, 1961 END

Summarizes characteristics of gums and starches

Features and applications of cook-up starches, pregelatinized starches, natural starches, and water-soluble gums are listed in tabular form, in 4-page Bulletin, No. 101, from Morningstar-Paisley, Inc.

The group of cook-up food starches includes five varieties of modified tapioca and potato starches for various thickening applications where acid compatibility is among prerequisites.

Pregelatinized food starches include seven varieties of pregelatinized tapioca, arrowroot, and potato starches that are soluble in cold water and may be used in viscosity control.

Properties of the unmodified starches — tapioca, arrowroot, and potato — are also shown in the tables. Information about seven water-soluble gums include the special features of each and suggested product applications.

7256 on Reader Service Slip.

"Now this little model's for small fires . . like your cigar there . . ."

SUPERESINS®

WILL SLASH YOUR COSTS

DRAMATIC SAVINGS are being made by large food processors and meat packers who have switched to FRITZSCHE'S new line of essential oil – oleoresin mixtures...

SUPERESINS®

When extended on a dry soluble carrier (such as salt or anhydrous dextrose), these carefully controlled, standardized materials replace the corresponding natural spices *pound for pound.* By using them, manufacturers can now *prepare their own dry soluble spices as needed,* thus eliminating the higher cost, bulk storage and deterioration problems often associated with the commercially made offerings. SUPERESINS® are made in our Clifton plant from the finest grades of selected spices and all conform to Federal Specifications EE-S-645. Examine the accompanying list and then write us on your letterhead for free test samples of those that interest you.

ALLSPICE
(Pimenta Berries)
BASIL
BLACK PEPPER
CAPSICUM
CARAWAY
CARDAMOM
CELERY
CINNAMON
CLOVE
CORIANDER
CUMIN
DILL SEED
FENNEL
GINGER
MACE
MARJORAM
NUTMEG
SAGE
THYME

The above SUPERESINS® *are available in 5 gal. (35 lb.) steel pails with pouring spouts and covers.*

FB INC.

FRITZSCHE BROTHERS, Inc.

A FIRST NAME IN FLAVORS SINCE 1871

76 NINTH AVENUE NEW YORK 11, N. Y.

Branch Offices and *Stocks: Atlanta, Ga., Boston, Mass., *Chicago, Ill., Cincinnati, Ohio, Greensboro, N. C., *Los Angeles, Cal., Philadelphia, Pa., San Francisco, Cal., St. Louis, Mo., Montreal and *Toronto, Canada; *Mexico, D. F. and *Buenos Aires, Argentina. Plants: Clifton, N. J. and Buenos Aires, Argentina.

7257 on Reader Service Slip.

KELCO COMPANY

REFINED ALGIN PRODUCTS

technical bulletin

Use unique Kelco Algin Colloids to improve your food products

In Frozen Foods, Kelcoloid, in acid to neutral foods having oil-water systems, provides emulsion stability. Coarse ice crystal formation is retarded. Kelcoloid holds structure of food, maintains smooth uniform texture, and promotes complete flavor release.

In Gravies, and in Cream, Meat and Barbecue Sauces, Kelcoloid provides efficient emulsion stability, and aids in thickening and bodying, too. Kelcoloid produces properly stabilized, free-flowing sauces that are homogenous and eye appealing, with clean full flavor. Shelf life is measurably extended.

In Salad Dressings, Kelcoloid, highly efficient stabilizer, prevents body separation and markedly increases shelf life. Kelcoloid promotes a uniform, smooth consistency giving dressings a highly desirable, palatable appearance.

No Surer Way to Achieve Effective Emulsion Stability

KELCOLOID HVF, the high viscosity member of this series, is generally recommended for use where a decided increase in viscosity is desired along with effective emulsion stability.

KELCOLOID LVF, the low viscosity member of this algin series, produces excellent emulsion stability and desirable body qualities. The LVF is recommended for use where a high degree of emulsion stability is desired with a minimum change in viscosity and body properties.

YOURS ON REQUEST: Free samples of KELCOLOID and other Kelco algin products, plus Technical Data describing properties, advantages and uses. At your service, too, are highly qualified food technicians ready to give individual attention to your problems. Write without obligation to your nearest Kelco regional office.

Kelcoloid HVF® Kelcoloid LVF® products of Kelco Company

75 Terminal Avenue, Clark, N. J. • 20 N. Wacker Drive, Chicago 6, Ill. • 530 W. Sixth Street, Los Angeles 14, Calif.
Cable Address: KELCOALGIN — CLARKNEWJERSEY

7258 on Reader Service Slip.

ingredients

900 Cal diets

have limited usefulness according to the AMA

FORMULA DIETS as weight-reduction regimes is the subject of an official statement by the Council on Foods and Nutrition of the American Medical Association, which was issued in May, 1961.

It recognized that unsupervised use of a formula diet for a short period of time by those who are not grossly overweight may assist individuals in losing a relatively small amount of adipose tissue without presenting difficulties. But it seriously questioned the use of such a diet as a rational approach to those seriously overweight.

For a copy of the statement, write to Dr. Philip L. White, Secretary, Council on Foods and Nutrition, AMA, 535 N. Dearborn St., Chicago 10, Ill.

Resume of tomato culture includes reference lists

The 1961 issue of American Tomato Yearbook, edited by John W. Carncross, contains statistical tabulations that show state yields, acreage, production. Also shows statistics on the production of juice, pulp, and catsup and includes import and export information.

References for additional information includes names of leading research investigators, associations, experiment stations working with tomatoes, and sources of supplies and services.

An article by Will M. Simmons, discusses the trends in the geographic pattern of production of tomatoes for processing.

Copies of the 44 page paper bound book are available from Rutgers University, College of Agriculture, 8 Elm Street, Westfield, N. J. Price $2.00 per copy.

For more information on product at right, circle 7259 . . . see information request blank opposite last page.

The Fruits of Knowledge in Flavor

Practical, cost-saving techniques in natural and artificial flavor development originate in the Kohnstamm laboratories. More than a century of experience can shed invaluable light on your present-day needs. Our book of flavor knowledge is open to you. Write today.

SINCE 1851

H. KOHNSTAMM & CO., INC.

First producers of certified colors

161 AVENUE OF THE AMERICAS, NEW YORK 13, NEW YORK

11-13 E. Illinois St., Chicago 11; 2632 E. 54 St., Huntington Pk., Calif.

MYVACET

Distilled Acetylated Monoglycerides

lower the cost

of getting

your frozen fish

all the way

to

here

Our food fats called *Myvacet* distilled acetylated monoglycerides are remarkable first of all because they form a seal that guards freshness and is itself actually nutritious.* But better than that, they can save you the cost and shrinkage that glazing and re-glazing entail.

Give a fish one quick dip in one of the *Myvacet* distilled acetylated monoglycerides and that's all the handling it needs before it's finally cut up, yet it's protected against weight loss in storage. The skin-tight nutritious film clings intimately to every indentation and irregularity in the shape of the fish. To see how protected we mean, look at this chart:

Comparison of weight loss for coated vs. uncoated frozen whiting

Conditions: dip bath temp. 160°C. (320°F.)
storage temp. −17°C. ±3°C.
dip time 1 second

sample	type of coating	fish temp. °C.	% coating	% weight loss, weeks 1	2	3	4	5	6
1	control	−20°C. (−4°F.)	—	3.0	4.3	6.0	8.1	9.6	11.2
2	ice glaze	−20°C. (−4°F.)	4.65	3.6	6.1	7.7	9.9	11.4	13.3
3	MYVACET	−20°C. (−4°F.)	4.38	0.3	0.3	0.4	1.0	1.1	1.3

Then, when the whole fish is cut, another dip re-coats the exposed surfaces equally quickly and easily. With weight loss still no problem, there's little need to add expensive compensating overages at this stage.

When the fish gets to the supermarket, the tight-clinging film coat is still working for you, preventing unappetizing freezer burn which might discourage the lady shopper. In fact, the looks of the finished product can be so improved that you may even spend less for package design, both protective and ornamental.

And because this nutritious coating protects against oxidation, there's little chance for an off flavor to occur, which makes repeat business more hopeful.

Let us go into more detail on the whole matter by means of a technical bulletin which fully describes the application of *Myvacet* distilled acetylated monoglycerides to frozen fish. Let us also send you samples of the types suited to your business. The address is ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York and Chicago • W. M. Gillies, Inc., West Coast • Charles Albert Smith Limited, Montreal and Toronto.

*We mean just that. *Myvacet* distilled acetylated monoglycerides are treated by the body as true foods, and approved for use up to 5% for various purposes in or on finished food. See U. S. Food and Drug Regulations, Sec. 121.1018. The quantity applied in coating fish is on the order of 2 to 5%.

producers of **MYVACET®**
Distilled Acetylated Monoglycerides

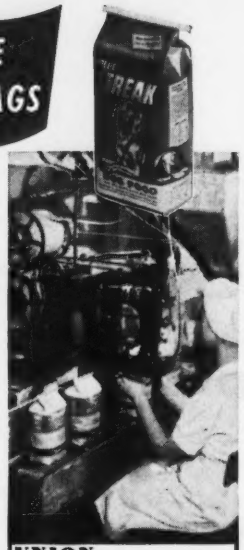
DPi

Also . . . Myverol® Distilled Monoglycerides . . . vitamin A for foods and pharmaceuticals

Distillation Products Industries *is a division of* **Eastman Kodak Company**

7260 on Reader Service Slip.

A BETTER CLOSURE for SMALL PAPER BAGS



UNION SPECIAL'S *Style 60000 D* Bag Closing Machine, producing the exclusive Dubl-Tape closure, is designed to speed packaging . . . cut costs . . . and improve appearance.

- **FAST—Speed to match output of standard filling and weighing equipment.**
- **NEAT—Produces an eye-pleasing, sales-stimulating package with high merchandising value.**
- **ECONOMICAL—Operating cost per bag is at a minimum . . . uses inexpensive cotton thread and paper tape.**
- **VERSATILE—Adjustable for a wide range of bag sizes, short or long runs.**

Write for BULLETIN No. 100 to get the complete facts on this machine . . . and how it can do a better closing job for you.

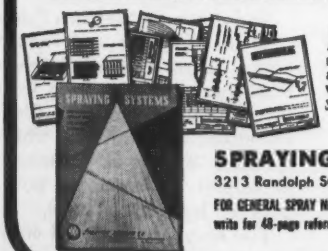
Union Special® MACHINE COMPANY
432 N. Franklin St., Chicago 10, Ill., U.S.A.
BAG CLOSING MACHINES

7261 on Reader Service Slip.

some
SPRAY NOZZLE
application ideas

for lower cost, better production

- use pneumatic atomizing nozzles on fruit and nut packaging lines for automatically opening bags and placing fumigant.
- you can add water to dry foods by spraying in precise form and quantity for exact control of moisture content.
- if you have a roof heat problem over ovens in summer, roof cooling spray nozzles will reduce temperatures as much as 18° F.
- clean transport truck tanks with spray nozzle heads . . . eliminate costly hand cleaning.
- where water is used anyway and where products will float, a water trough conveyor is an idea, with spray nozzles used to keep products moving.



DATA SHEETS are available on a wide range of spray nozzle applications. Just write and describe your particular need.

SPRAYING SYSTEMS CO.
3213 Randolph Street • Bellwood, Illinois
FOR GENERAL SPRAY NOZZLE INFORMATION . . . write for 48-page reference Catalog No. 24.

7262 on Reader Service Slip.

Two more enzymes for baking quality control

More flexibility for achieving improved results

Uses-Features: Two enzyme products, called Protease 41 and Rhozyme J-25, have been added to the Rhom & Haas line of bakery enzymes to provide a wider range of selection.

By furnishing enzymes having various ratios of diastase to protease activity, the most suitable and economic combination for each particular set of baking conditions can be found.

Diastase enzyme activity is usually used in baking applications to speed up fermentation and reduce firming of the crumb on aging. Protease activity will decrease mixing time, improve grain, and texture.

Description: Protease 41 has a negligible diastase activity (30 SKB) and a very high protease activity (34,000 HU). Rhozyme J-25 has a very high diastase activity (9000 SKB) and a high protease activity (25,000 HU).

The two new enzymes supplement two others that have been available for several years. Rhozyme 33 has a very high diastase activity (5000 SKB) and a low protease activity (4000 HU). Rhozyme A-4 has a high diastase activity (3500 SKB) and a very high protease activity (34,000 HU).

Supplier: Rohm & Haas Co., Washington Square, Philadelphia 5, Pa.

7263 on Reader Service Slip.

All about pecans for processing

"Pecans for Processing" is a comprehensive 92 page bulletin by J. G. Woodroof and E. K. Heaton reporting on investigations at the Georgia Experiment Station. Utilization of pecans in food products is covered specifically in some 22 pages.

For a copy write to Georgia Experiment Station, Experiment, Ga., ask for Bulletin N. S. 80.

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Jamaica Style

RUM FLAVOR

. . . puts the "YUM" in your product!

- Delight the palates of young pirates and their parents by adding Flavorex Rum Flavor to your product. Great for a *hearty accent!* Exquisitely exotic as an *extra touch of flavor!*
- Use Flavorex Rum Flavor in *baked goods, confections, puddings, eggnog mixes, ice cream,* and other foods. You'll be doubly rewarded these ways . . . perfect for your present formulas . . . helps earn consumers' preference for your product.
- Flavorex Jamaica Style Rum is a flavor concentrate of natural and synthetic esters produced in our own plant and blended by our masters of the art. Run a batch test. You'll discover that every fragrant drop adds mellow tropical sunshine to your product. Write for free sample, or place a trial order today.

Rum Flavor No. B224 . . . $12 per gallon

Better Flavors for Better Products
FLAVOREX CO., INC.
302 S. CENTRAL AVE., BALTIMORE 2, MD.

7264 on Reader Service Slip.

Better handling

✓ in plant ✓ in transit

That's why Corn Products ships its sugar in extensible multiwall bags!

FP STAFF

One-hundred-lb bags *of dextrose stacked in one of Corn Products' Argo, Ill., warehouses demonstrate inherent strength and good pallet-handling characteristics of new CLUPAK bag*

SINCE THE FIRST of the year, Corn Products Company has been shipping its Cerelose Brand dextrose corn sugar to bakers and to processors of jams, jellies, preserves, candies and canned foods in CLUPAK extensible-kraft multiwall bags.

The new 4-ply, 190-lb total basis weight sacks replaced 5-ply, 210-lb regular kraft multiwalls.

Superiority of the new bags, both for in-plant and in-transit handling was demonstrated over a five-month test period, during which Gordon Ross and his industrial-product packaging group at Corn Products subjected the CLUPAK bags both to laboratory procedures and actual cross-country shipment.

Table on facing page shows shipping-test results. Percentage of bag damage was reduced from an average 1.5 per cent for regular five-ply kraft bags to 0.17 per cent for the extensible bags.

From a previous normal bag-damage rate of nine bags per 600-bag car, the tests showed loss reduced to an average one bag per car. Bag scuffing also was appreciably reduced.

These results led Corn Products to apply for and receive approval of the new 190-lb total basis weight bags from the railroads' Uniform Classification Committee, which specifies kinds of containers permitted for shipping products of this general type.

The only problem that arose

Text continued on page 72

performance

TEST SHIPMENT RESULTS

(Pekin, Ill., to Ridgefield, N.J.)

	Regular five-ply, unbleached kraft multiwall sacks, gusseted sides, 100 lb. Size 19½ x 3 x 41 in. Plys — 1/40-lb smooth; 3/40-lb; 1/50-lb smooth.	Four-ply extensible kraft multiwall sacks, gusseted sides, 100 lb. Size 19½ x 3 x 41 in. Plys — 2/40-lb ext.; 1/50-lb ext.; 1/60-lb ext.
No. of bags shipped	60,600	3600
No. of bags damaged	909	6
Average no. of bags damaged per car	9	1
Per cent bags damaged	1.5	.17

CLUPAK extensible paper is essentially a modified form of kraft. It is made on a regular kraft paper machine equipped with a special unit which compresses paper fibers at a given point in the process. This gives the extensible kraft its elasticity.

Sometimes referred to as stretchable, the paper is able to absorb more shock and withstand greater impacts than standard kraft. Tests have demonstrated that the extensible paper can resist five times the punishment of conventional kraft.

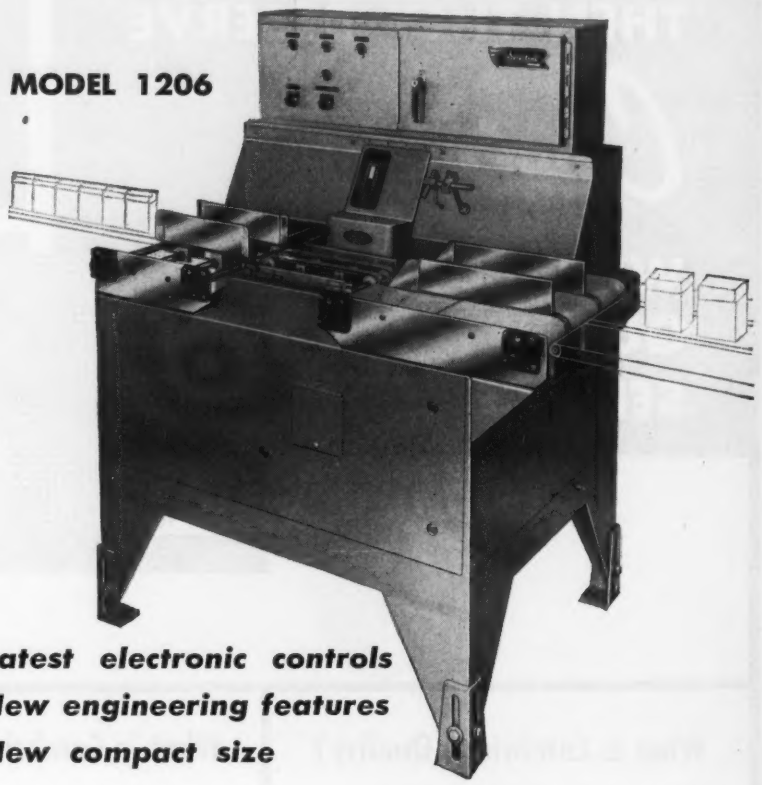
The method of making extensible paper was originated by Sanford L. Cluett, vice president of Cluett, Peabody & Co., Inc. — inventor of the shrink-resistant process known as Sanforizing.

West Virginia Pulp and Paper Company developed the new extensible paper process for commercial production, and the two companies then jointly formed Clupak, Inc., 530 Fifth Ave., New York 36, N.Y., which licenses paper manufacturers to produce extensible paper.

7265 on Reader Service Slip.

SELECTROL® Automatic CHECKWEIGHER

MODEL 1206

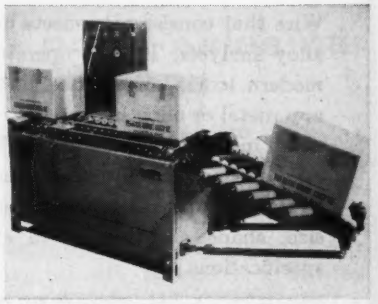


Latest electronic controls
New engineering features
New compact size

This new Selectrol checkweigher automatically weighs, classifies and sorts at speeds up to 120 items per minute, depending on size and weight of object. Rejection accuracy is 2/10 of one percent of the weight of the commodity at maximum speed.

New Selectrol features include compact size that requires minimum space in a conveyor line . . . and simplified circuits. Electrical controls are mounted above the conveyor line for easy accessibility.

Selectrols are made by Exact Weight, a leading manufacturer of job-engineered scales for 45 years with experience gained through hundreds of checkweighing installations during the past 20 years. For complete details, write for Bulletin 3377.



CASE AND BAG CHECKWEIGHER

Model 1250 Selectrol Automatic Checkweigher is designed for checking bags, cartons and cases from 20 lbs. to 100 lbs, at speeds up to 30 items per minute. Accuracy is 1/10 of one percent at maximum speed. Can be supplied with or without rejection equipment. Write for Bulletin 3376.

THE EXACT WEIGHT SCALE CO.

Exact Weight SCALES

909 W. FIFTH AVE., COLUMBUS 8, OHIO
In Canada: 5 Six Points Road, Toronto 18, Ont.

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Sales and Service Coast to Coast

BETTER QUALITY CONTROL . . . BETTER COST CONTROL

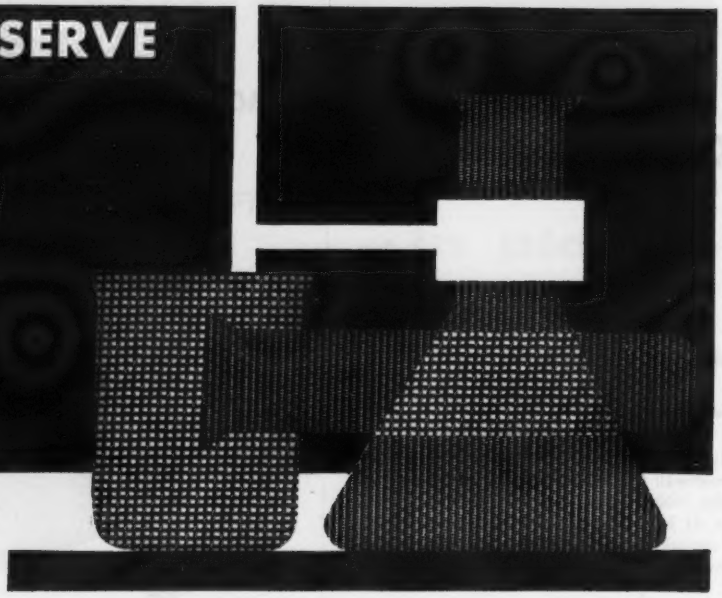
7266 on Reader Service Slip.

use wire cloth in critical operations?

THEN THEY DESERVE

Cambridge

WIRE CLOTH QUALITY & SERVICE



What is Cambridge Quality?

Wire that consistently meets metal or alloy analyses. Trained operators and modern looms to produce cloth from any metal or alloy in any weave. Constant inspection to assure high accuracy in mesh count and mesh size. Craftsmen to make fabrications in any size, shape or quantity to exacting specifications.

This is Cambridge Wire Cloth Quality.

What is Cambridge Service?

Prompt answers to mail or phone inquiries. Experienced Field Engineers—experts in their field—who can help you select the wire cloth to do the best job at lowest cost. Prompt deliveries. Large stocks of frequently used cloth for immediate shipment. Follow-up service to see that our product is giving you the results you want.

This is Cambridge Wire Cloth Service.

Your Cambridge Field Engineer can show you how Cambridge quality and service can help you in your operation. Call him at any time. He's listed in the Yellow Pages under "Wire Cloth". Or, write direct for illustrated 120-page catalog.

Refer to our technical data sheet in CHEMICAL ENGINEERING CATALOG, Page 185.

The Cambridge Wire Cloth Co.

Department H • Cambridge 8, Maryland

Manufacturers of Metal-Mesh Conveyor Belts, Flat Wire Conveyor Belts, Wire Cloth, Wire Cloth Fabrications and Gripper ® Metal-Mesh Slings.

7267 on Reader Service Slip.

continued from page 70

during the investigation of the new bags occurred when the first samples were being palletized, or otherwise stacked for shipment or storage. The smoother surface of the extensible paper caused some slipping of stacked bags.

This was subsequently corrected by supplying the outer ply of the bag in a less slippery finish. The current outer ply is still smoother than regular kraft and provides a good printing surface for the distinctive red and blue lettering on the corn sugar bags.

While the reduction in basis weight — from 210 to 190 lb — cut the breakage rate to below-normal levels, it would perhaps have been possible to reduce basis weight still further and maintain normal breakage, Corn Products believes.

However, since the company ships bagged products to over 400 warehouses and depots

Bagging line for Cerolose dextrose runs smoothly with new bags which open readily, stand upright easily and resist handling damage well

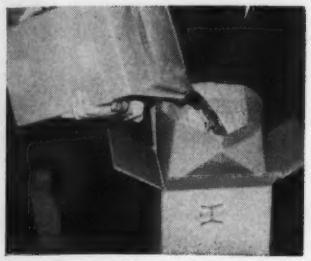
for distribution across the U.S., the anticipated savings in loss of product during shipping and handling — and consequent customer satisfaction — will prove highly rewarding. END

Additional information quickly!

Use the convenient Reader Service Slip, found opposite the inside back cover, to secure additional information for application to your problem.

Plastic-lined liquids carton cuts shipping weight, size

Uses: Versatile plastic-lined paper container can handle semi-liquids, liquids, powders, granules and solids. It has been found ideal for concentrated products such as soft drinks, extracts and syrups, ice cream mix, vegetable oil.



Container eliminates possibility of injuries to handlers, since there are no sharp metal edges or breakable glass involved

Features-Description: Simple construction consists of transparent liner made of 3M Company's "Scotchpak" heat-sealable polyester film, laminated to a thin sheet of kraft.

The paper is fabricated into box shape, then inserted into an outer paper container for extra rigidity.

When filled, the new container takes only about one-third as much space as do filled glass and metal containers with the same capacities.

Capable of being easily reclosed, container top is folded in such a way as to form a spout and vent (see cut). Either end of the fold can be used as the spout, with the other end serving as the vent.

This prevents "glugging" or the formation of air bubbles during pouring.

The film, which is not affected by scoring or folding, is capable of keeping inert gases in the container, and oxygen or gaseous contaminants out to prevent oxidation and content degradation.

Liner is completely and hermetically sealed, giving a seal as tough as the film itself.

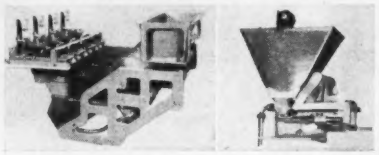
Supplier: Waldorf Paper Products Co., 2250 Wabash Ave., St. Paul, Minn.

7268 on Reader Service Slip.

Hayssen's Five Automatic Feeds Fit Any Product

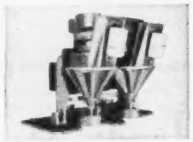
Whatever your product — liquid, powder, granules, solids — Hayssen COMPAK form, fill and seal machines have the automatic feeding system to give you greater accuracy, higher production speeds and increased efficiency. For the finest in flexible bag packaging, match your product to one of these Hayssen COMPAK automatic feeding systems!

NET WEIGHT SCALE
Weighs with extreme accuracy. Scales control bag making unit to eliminate overfeeding and empty bag making. Convenient controls permit weight changes in seconds.

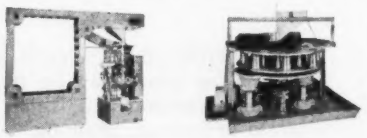


LIQUID PUMPS
Models available to handle all liquids regardless of viscosity! Hayssen pumps feed either pure liquids or products in liquid suspension. Non-drip valves assure clean seals every time!

AUGER FEEDS
Augers are individually controlled and adjusted. Sealed gear housing is permanently lubricated. Product agitation is separate operation. Ideal where close tolerances are required.



VOLUMETRIC FEED
Turret travels cup several feet to settle and distribute product. Telescoping cups allow in-operation adjustments. Choose from four types to meet your specific requirements.



AUTOMATIC ELEVATORS
Ideal for hardware, toys, premiums and other hand fed products — also suitable for combination or multiple products which must be fed to one package. Conveyors are custom built, and can operate in conjunction with other feeding systems.

For full details on automatic feeding systems — and the complete line of Hayssen flexible packaging machines — write or call today!

nothing frustrates a good salesman like a poor package

Hayssen machines produce saleable packages — the kind your salesmen want and need! Hayssen knows what makes a saleable package (we've been producing them since 1910) and we're at your service to develop the type of packaging that will do your product justice. Hayssen machines are busy right now in hundreds of companies packaging liquids, powders, granules, hard and soft goods in saleable packages. Why not see what Hayssen packaging machines can do for you. There is no charge or obligation for this service — just look in the Yellow Pages under Packaging Machinery! Your salesmen will be mighty glad you did!

Exclusively Manufacturers of Packaging Machines Since 1910

HAYSSEN

MANUFACTURING COMPANY • SHEBOYGAN, WISCONSIN

Offices in principal cities. Check your phone directory.

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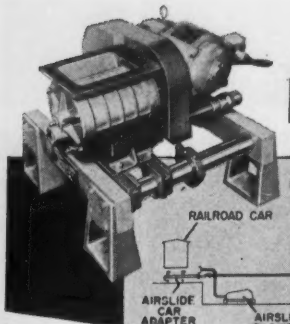
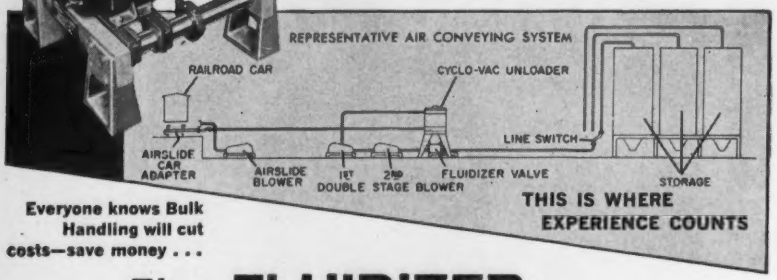
NEW YORK • PHILADELPHIA • ST. LOUIS • SAN FRANCISCO • MONTREAL • TORONTO • VANCOUVER • Offices In Principal Foreign Cities

7269 on Reader Service Slip.



THINKING ABOUT

BULK HANDLING?



Everyone knows Bulk Handling will cut costs—save money . . .

THIS IS WHERE EXPERIENCE COUNTS

The important point is:

FLUIDIZER CAN DO IT *BETTER*... BECAUSE FLUIDIZER HAS THE *EXPERIENCE*

Fluidizer pioneered in this area and knows what will work and how to pinpoint capabilities and limitations. You don't pay the penalty for costly guesswork. Experienced Fluidizer engineers create unique and imaginative approaches to specific customer requirements. Successful performance proved by repeat purchases. Call us for the *facts*.

Proven record for conveying: Sugar (including powdered) Starch, Flour, Dried Milk, Chemicals, Plastics, Clays, etc.

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made by FLUIDIZER DIVISION
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AIR CONVEYING SYSTEMS . . . *"most advanced in modern Air Handling".*

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New dry process imprinter for pouches, bags, wraps, strip packs

"WRAP-A-PRINTA"® packaging machine imprinting attachment

Patented

• Makes crisp, opaque, really permanent impressions in any color • Uses low-cost roll leaf instead of ink . . . perfect for "hard-to-print" films, coated foil, waxed paper • Fits in idle space on all pouch, bag, wrapping, bundling machines • Fully automatic . . . synchronizes perfectly with continuous or intermittent web feed • Imprints anything from tiny code-date to 4" x 2" design • Ideal for short cutoffs on pouch machines — as short as ½"!

For full details write for "Bulletin RAP-1"

First and foremost in automatic production-line CODING MARKING and IMPRINTING machines

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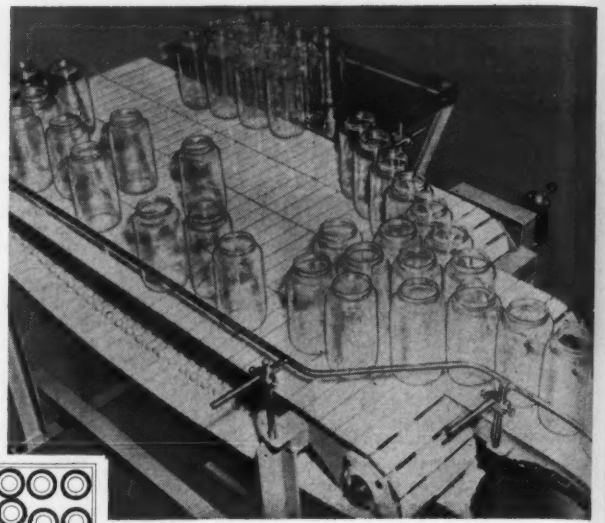

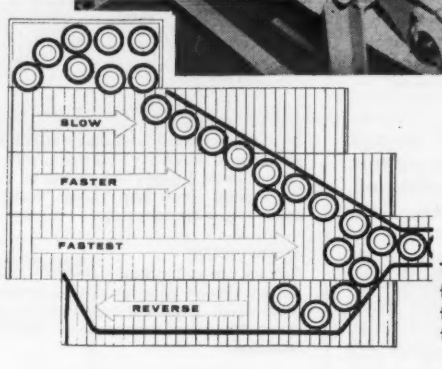

The friction-free Delrin surface facilitates smooth container transfer from belt-to-belt

'Jam-resistant' unscrambler . . .

'Blends' containers at variable speeds into straight line

NEW FOUR-BELT straight-line unit smoothly unscrambles containers by take-away on three forward-direction belts, with a reverse-direction belt which returns containers from congested areas to prevent jamming.

Each forward-direction belt moves at a progressively higher speed, to permit safe, gradual acceleration to the maximum-speed take-away belt.

As additional containers are loaded onto take-away belts, they push other containers onto faster-moving belts to accommodate the increased volume automatically.

To eliminate jamming, containers in congested areas are forced onto the reverse-direction belt, which returns them for a new start.

All belts — made of self-lubricating Delrin (R) plastic, which will never rust or corrode — are economically powered from a single variable-speed drive. Drive motor, of a horsepower as required by size of unscrambler unit, is totally enclosed.

Supplier: Four-belt straight-line unscrambler by Standard Metal Products Co., 123 N. Racine Ave., Chicago 7, Ill.

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plants, companies, personalities

Basic Foods, Inc.

Englewood, N. J., has appointed Nat H. Nash director of new products development

and marketing. Nash had been with American Breddo Corporation and Lanco Prod. Corp., where he had served as director of research and development for over 14 yr.

Produce Processors, Inc.

Windsor, N. C., has begun the first commercial production of yam flakes (precooked, instant sweet potato flakes), with initial capacity in excess of 20 million lb of yams per yr. Exclusive sales agent for the yam flakes is Morningstar-Paisley, Inc., 630 W. 51st St., New York.

Sterling Industries Inc.

is new name for Sacramento Freezers Inc. Address remains the same — P. O. Box 2710, Sacramento 10, Calif.

Seabrook Farms Division

of Francis H. Leggett & Co., a subsidiary of Seeman Brothers, Inc., has retained Dr. Joseph E. Steckel as agronomist, with responsibility for fertility practices and for initiation of research designed to improve raw material. For the past decade, Dr. Steckel has been professor of agronomy at University of Massachusetts, where he taught soil chemistry and head various soil research projects.

For more information on product at right, circle 7273 see information request blank opposite last page.

Our big three in cartons meet everyday at Olin

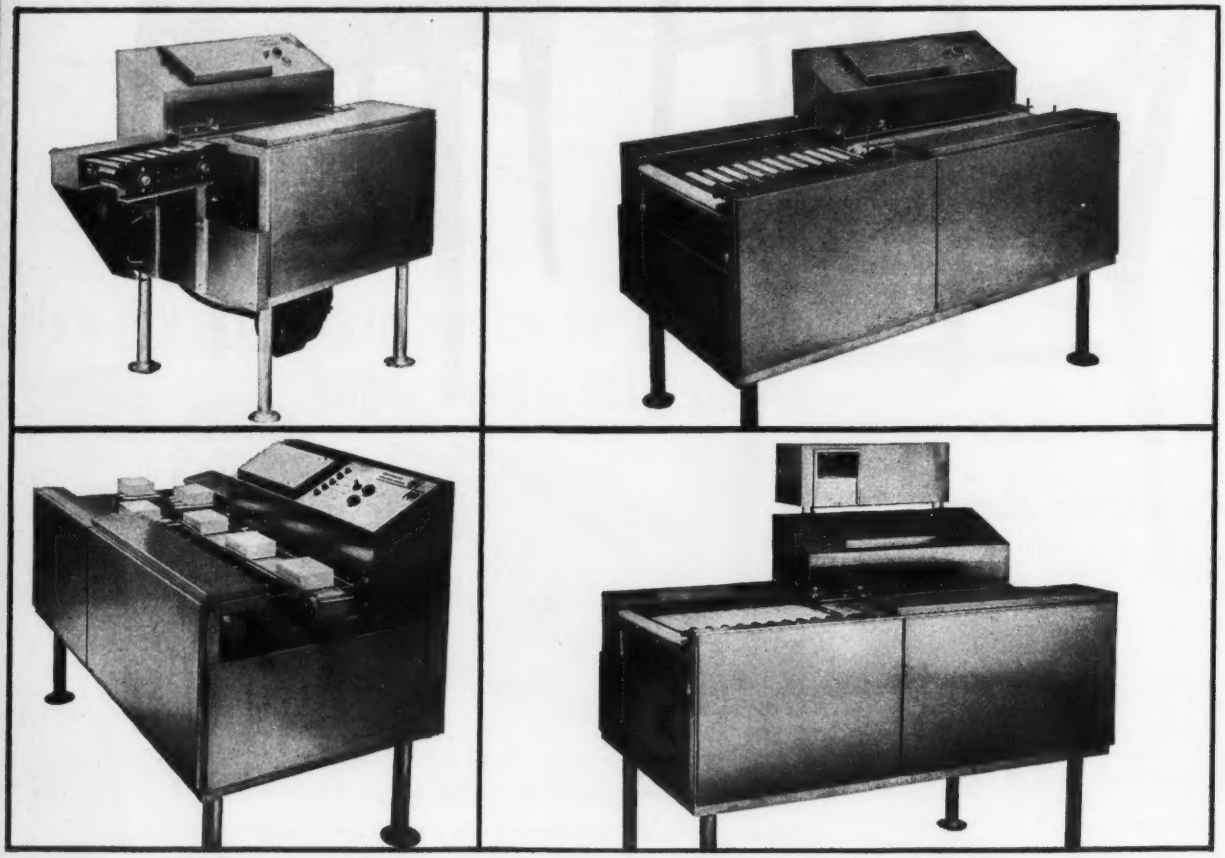
The big three in cartons are the graphic designers, the structural designers and the printers. Olin has made them even more important by bringing them together under one roof. The continual interchange of ideas possible at the Olin Carton Service not only produces better cartons, it avoids any of the many mistakes that can happen when Creative is three states away from Structural, and Printing is in another time zone.

The cartons turned out by Olin's centralized (and talented) staff are made of Omnikote, the strongest board in the industry. They are printed by one of the most advanced printing establishments in the world. And they are graphically designed to do the job of flagging down the nearsighted housewife who's left her glasses home. So if you're having trouble with cartons, tell us about it. Olin's big three probably have the answer.

PACKAGING DIVISION Olin
FOREST PRODUCTS OPERATIONS, P.O. BOX 1225, WEST MONROE, LA.

"WORK HORSES"

When the line runs, capacity counts! Illumitronic Checkweighers . . . Weight Monitors and Classifiers are rugged, accurate, and consistent performers in demanding environmental conditions. These machines are operating with cartons, bags, cans, pouches, tubes, trays, overwraps, blow-mold plastics, and products unsupported by packages. Speeds to 300 units per minute. Accuracy ±1/30th of 1 oz. Weights to 10 lbs. Investigate the economies of *automatically weighing in motion with featherweight accuracy!*



Write — or dial 415, RE 9-2395

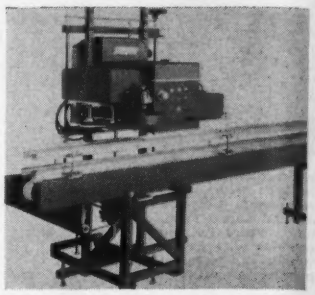
illumitronic systems corp.

680 East Taylor Sunnyvale, California

7274 on Reader Service Slip.

'Compact' version of high-speed packager

Uses-Features: New Amscomatic 75 series brings versatility of larger 100 series to installations with more modest production needs; also fills need of large firms operating



Packages travel upright for sealing by the 75H, inclined for sealing by the 75A — the two models in which unit is available

under a decentralized packaging program, requiring several compact units at different locations in plant.

Equipment provides either a bead-edge seal or an edge seal. Former is used particularly with multiple item baler bags, while latter provides a neat, tight-to-product fit for display packages (see photo below).

Description: Like the larger unit, Amscomatic 75 receives packages on an intake conveyor. Equipped with eight-ft conveyor, installation handles output of a single bag-

Excess end flap is automatically cut away and discarded

loading machine; with 10-ft conveyor, it seals output of two bag loaders.

Operating speed is 900 linear in. per min — well in excess of usual packaging requirements.

Optional equipment includes

electric-eye attachment which automatically halts conveyor upon detection of improperly aligned package, an ink-impression code-dater and an automatic label applicator.

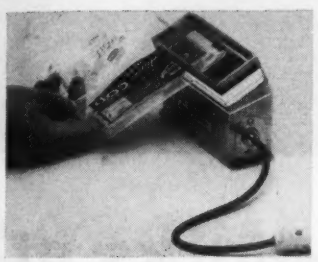
Supplier: Amsco Packaging Machinery, Inc., 31-31 48th Ave., Long Island City 1, N.Y.

7275 on Reader Service Slip.

Gives quick picture of heat seal's quality

Simple new device developed in Du Pont's Polychemicals Technical Service Laboratory uses polarized light to examine heat seals between transparent plastic films and laminates.

Essentially, the Heat-Seal-O-Scope is a polariscope in



Any non-uniformity in the web itself also is observed

which one polarizing filter is secured at an axis orientation of 90 degrees to that of the second. Such arrangement results in closed light value.

The "leak light" produced by inserting transparent plastic film or laminates between the instrument's filters allows the polymer's physical condition to be "seen" in a color and light intensity varied according to its crystalline condition.

Film areas of different crystalline structure show up as somewhat different colors — thus measuring quality of the heat seal.

Supplier: Precision Machine and Development Co., P.O. Box 645, New Castle, Del.

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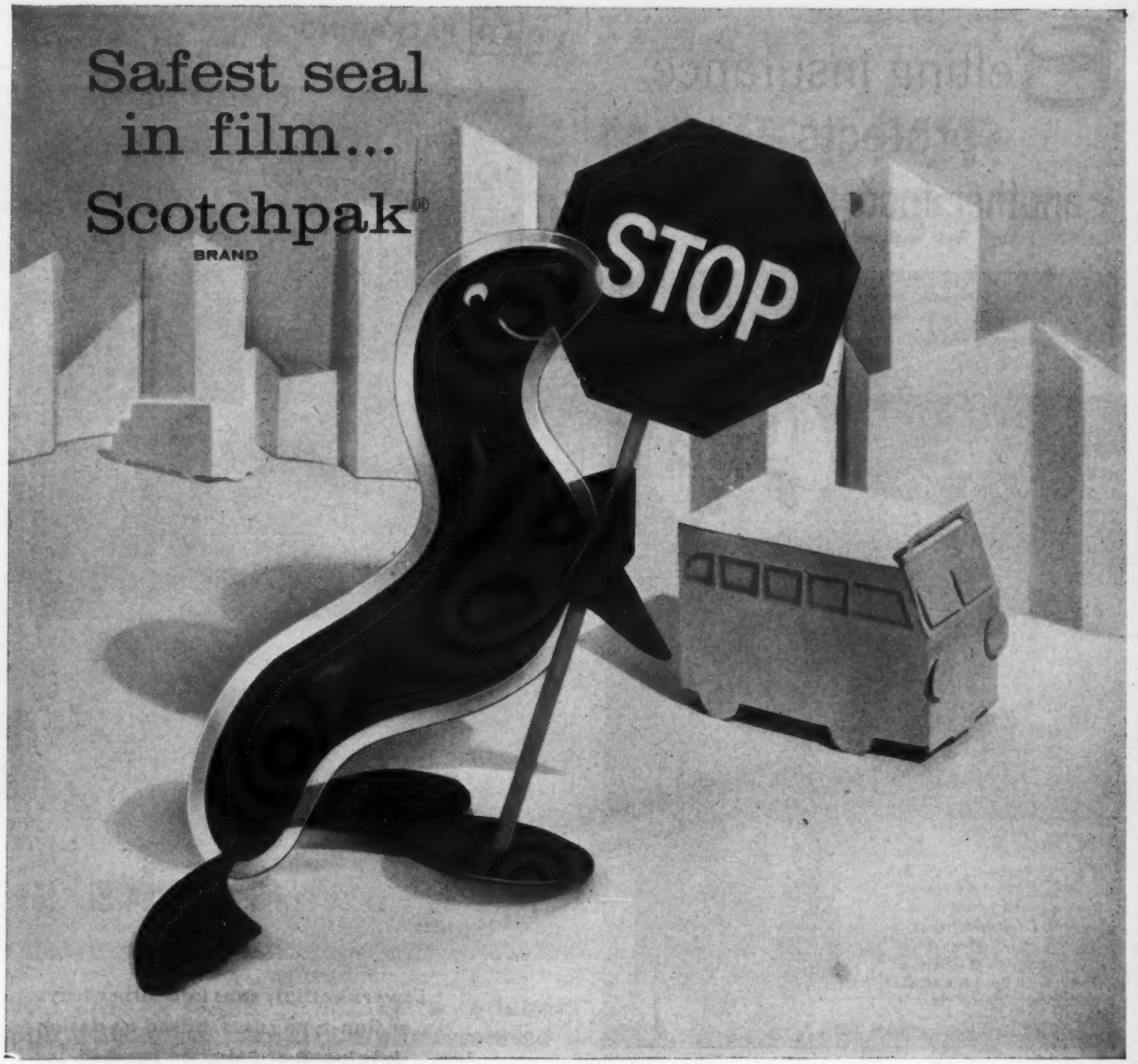
Check page 118 for helpful technical literature



If you've been frustrated by film seals that lose their grip, follow the example of Armour & Company's Continental Cuisine. Try "SCOTCHPAK" – the heat-sealable film that never fails.

Sliced Roast of Beef, Brown Gravy

The dependable seal of "SCOTCHPAK" gives a "go" signal to packagers who have been stopped by film problems. "SCOTCHPAK" is made differently than any other film on the market. It's specially tailored by 3M with the strictest quality-control supervision. It heat-seals easily at 300° to 400° F., 20-60 psi pressure, making a seam that is as strong and impermeable as the film itself. "SCOTCHPAK" stays strong and pliable, too, at temperatures from –70° F. to 240° F. *If you don't feel safe with other films you've tried, it's time you learned about* "SCOTCHPAK." We will be happy to send you samples and work with your packaging people. Write or call Film Products Group, 3M Company, 900 Bush Avenue, St. Paul 6, Minn. Dept. ICC-81.

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW

3M

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Belting insurance protects another food processor

Burrell belting insurance is becoming more important than ever to you, the food processor. Your protection is Burrell's 48 years of successfully engineering belts for all requirements.

Burrell Burtek Hy Gene Belt carrying hot, salted potato chips at Jays Foods, Inc. model Chicago plant.

Burrell Burtek Cleated Belt with solid Buna N cleats on Jays "Cheezelets" line.

Burrell belting insurance means:

- the right belt for each specific job
- prompt delivery and follow-up service

Burtek Hy Gene 3 (Buna N) belting provides:

- resistance to heat, fats, oils, food acids, alkalis
- flexibility under wide range of process temperatures
- maximum operating life to minimize down-time and production costs
- easy to clean and keep clean
- will not hold or transmit objectionable odors and flavors
- may be vulcanized or laced endless

• Write for the new catalog describing the full Burrell belting line.

BURRELL BELTING COMPANY
7501 N. ST. LOUIS AVE., SKOKIE, ILLINOIS
Chicago Phone: AMbassador 2-8110
SALES OFFICES IN PRINCIPAL CITIES

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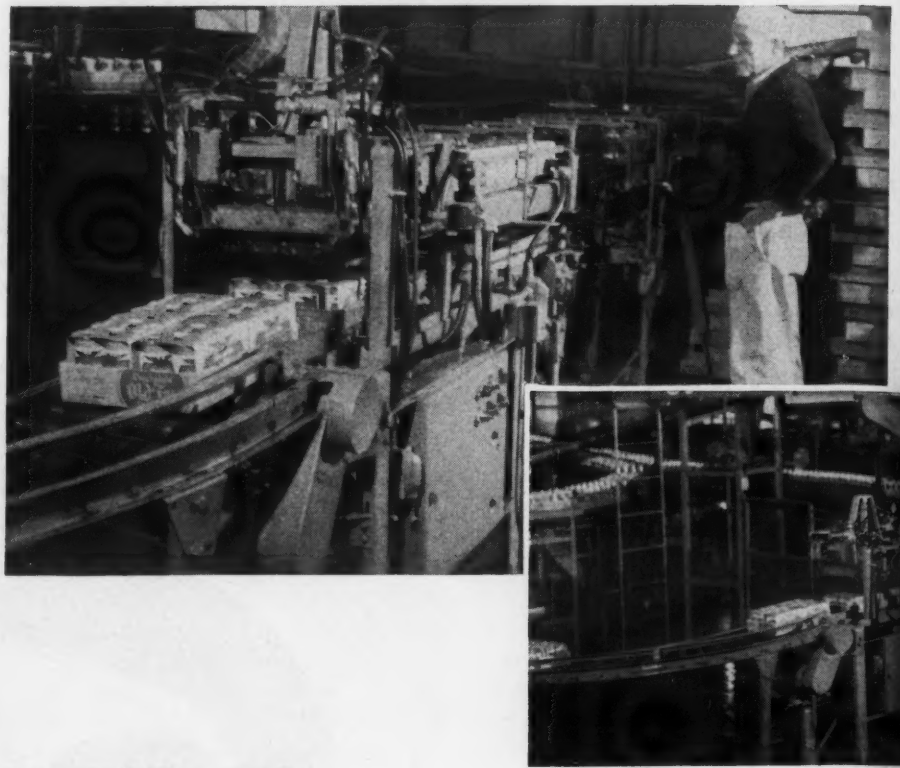


Automatically, gently

Packs six-packs at 7

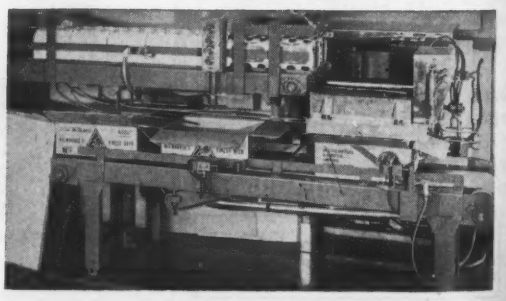
Lowers bottles, cans into either trays or flap-type cases, based on design developed at Pabst — Los Angeles

W. W. HENSEL, Packaging Maintenance Supt.
JAMES E. STEWART, Division Supt.
Pabst Brewing Company
KARL ROBE, Associate Editor

PROBLEM: Pabst Brewing Co., Los Angeles, had tried a number of approaches to automatic traying and cartoning six-packs of cans and bottles. None was satisfactory for the speeds and quality standards required by Pabst.

Solution: Two prototype machines based on W. W. Hensel designs now are in daily use at Pabst's Los Angeles brewery.

One: A fully automatic



Universal packer handles cans or bottles. If desired, on bottle line, an automatic partition-board inserter can be located after automatic caser to correctly space the six-packs of bottles and insert protective partition board cross-ways between six-packs

Trays feed into bottom conveyor, six-packs into top and filled trays automatically discharge

Automatic packer at Pabst requires little floor space

750 + CPM

packer which places four six-packs of cans in trays at rates of up to 125+ six-packs (750 cans) per min.

Two: A packer which will handle bottles in either trays or flap-type corrugated cartons at rates of 80+ per min, using an operator to position corrugated containers under filling head.

Results: Case packers at Pabst handle any line speed now used or planned. Automatic unit will amortize purchase price in less than one yr over manual method, and requires only one man to feed cases into line.

Breakage is nil. Drop-head principle lowers six-packs into cases gently, since they drop only four in.

New universal model. Based on experience at Pabst, a new-model packer recently developed will automatically pack either six-pack cans or

THREE WAYS EXTENSIBLE CLUPAK® PAPER SAVES MONEY FOR FOOD PROCESSORS

New kind of paper stretches to reduce multiwall costs... improve performance

CLUPAK extensible paper multiwalls g-i-v-e to absorb impact and strain . . . give even better performance than conventional kraft bags of heavier basis weight . . . produce substantial paper tonnage savings, plus other major benefits:

FILLING: Multiwalls fill faster and more evenly . . . reduce breakage . . . prevent costly interruptions in filling line schedules.

HANDLING: Withstand boxcar manhandling by absorbing impact . . . minimize loss from product damage and waste.

WAREHOUSING: Take rougher handling, higher stacking, without splitting or bursting.

Today 15% to 25% of all industrial multiwalls are made of CLUPAK extensible paper. Savings are the reason! Ask the man who sells you paper for a test shipment!

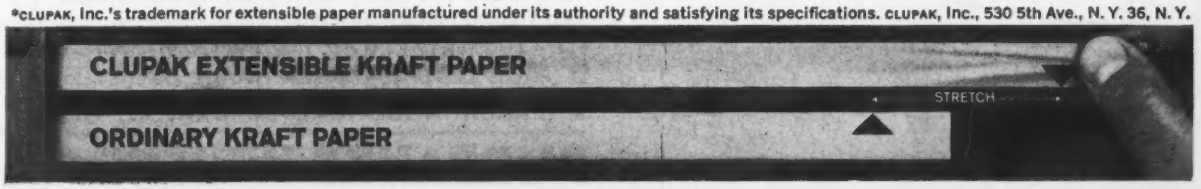
EXTENSIBLE CLUPAK PAPER **Compared to conventional kraft of equal basis weight has:**

- Up to 7 times more controlled machine direction stretch.
- 3 to 5 times greater ability to withstand impact and shock.
- 10 to 20% increase in cross direction stretch.
- 40% improved puncture resistance.
- Identical surface properties and printability.

EXTENSIBLE CLUPAK® PAPER*

"IT STRETCHES TO SHRINK YOUR COSTS"

*CLUPAK, Inc.'s trademark for extensible paper manufactured under its authority and satisfying its specifications. CLUPAK, Inc., 530 5th Ave., N. Y. 36, N. Y.



7279 on Reader Service Slip.

bottles at rates of 750 per min or more for cans, 450+ for bottles, in either open trays or four-flap corrugated cartons.

Slight modification is needed to change packages.

Universal machine uses drop-head principle in which four six-packs are received in two rows on upper conveyor,

Model 523DH Universal six-pack packer and Model 565PI partition inserter are products of J. B. Seage Co., 2415 E. 56th St., Los Angeles 58, Calif.
7281 Model 523DH Packer
7282 Model 565PI Inserter

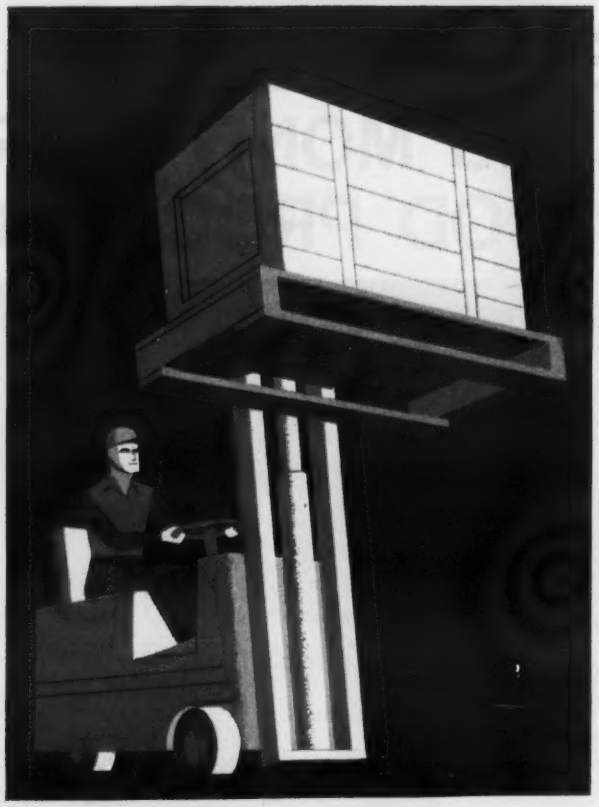
while opened cartons or trays are conveyed into position on lower tiers.

When four six-packs are indexed in the head, side-plates compress them together, and entire head assembly lowers the 24-container unit into tray or case below.

Automatic controls are interlocked so that drop head doesn't actuate until four cases are present and case or tray is positioned to accept them below.

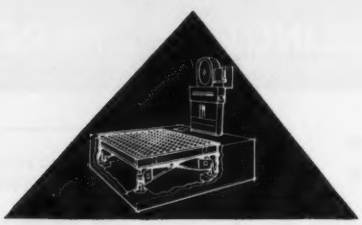
Packer is rigidly mounted on one-in.-thick base plate to assure alignment of all components during shipment and use.

Rising-dropping head operates pneumatically on a heavy vertical gib which is adjustable for wear, thus offers years of low-maintenance service. END



...CUT COSTS AND SAVE TIME WHEN WEIGHING MATERIALS ON POWER OR HAND TRUCKS

FAIRBANKS-MORSE WAREHOUSE SCALES



Self-Contained Scales

- For general use in factories, warehouses, shipping rooms, foundries, paper mills and other industrial applications.
- Thirty different models for your special requirements . . . with direct-reading "Floaxial" Dials, with or without "Printomatic" weight recorder or with Double Beam. Capacities from 600 lbs. to 3200 lbs.
- All models feature the F-M Type "S" Lever System—a suspension system that swings parallel to the direction of traffic . . . thus protects scientifically ground pivots and bearings . . . results in accuracy that lasts for longer periods of time.

Built-In Floor Scales

- Especially designed for heavy-duty use in metal working plants, steel mills, paper mills, textile mills, mines . . . and for general factory use.
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- All models feature the F-M Type "S" Lever System for complete accuracy over longer periods of time.

For complete information on any or all Self-Contained and Built-in Scales, write: **C. G. Gehringer, Marketing Director, Scale Division; Fairbanks, Morse & Co., 100 Electra Lane, East Station; Yonkers, New York.**

FAIRBANKS MORSE
A MAJOR INDUSTRIAL COMPONENT OF
FAIRBANKS WHITNEY

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"Yeah, sure it's economical, but I almost went nuts training them woodpeckers."

plants, companies, personalities

Armour & Company

Chicago, has promoted Robert J. Smith from frozen egg department manager to manager of the newly created egg products department. The new department, supervised by Lloyd Woodall, vice president, Dairy, Poultry and Margarine division, incorporates the former frozen and egg solids departments. It will market a line of frozen and dried whole eggs, egg whites and yolks for bakeries, mayonnaise, salad dressing and noodle manufacturers, confectioners and other food processors.

V. La Rosa & Sons, Inc.

Brooklyn, world's largest producer of macaroni, spaghetti and egg noodles, has aquired La Premiata Macaroni Corp., Connellsville, Pa., and will operate the newly acquired facility as a La Rosa division, with the firm's management continuing in their present capacities.

International Salt Company

Clarks Summit, Pa., in its first diversification step, has acquired the entire assets of Pfeiffer's Food Products, Inc., Buffalo manufacturer of high-quality salad dressings. International's new subsidiary will be known as Pfeiffer's Foods, Inc.

Beatrice Foods Company

has elected Edward M. Muldoon vice president. He will continue as general manager of Beatrice's Grocery Products division and general manager of La Choy Food Products, Archbold, Ohio. Muldoon will continue to maintain his headquarters at 6500 E. Warren Ave., Detroit 7, Mich.

Campbell Soup Company

has named to its board of directors Gilbert C. Swanson, chairman and president of Butter-Nut Foods Co., Omaha. Swanson formerly headed C. A. Swanson & Sons, which developed the Swanson "TV" Brand Frozen Dinner. The Swanson company became affiliated with Campbell in 1955.

Millions of menus in corrugated

Hot dogs and hamburgers at a drive-in...gourmet meals in an exclusive restaurant. Behind every bill of fare is a steady flow of food in corrugated boxes. And millions of them are made by Hinde & Dauch Division. Leading food processors depend on H&D for *economical shipping containers in volume*—plus expert technical services to keep costs low.

West Virginia Pulp and Paper

Hinde & Dauch Division

16 Plants • 42 Sales Offices • Sandusky, Ohio

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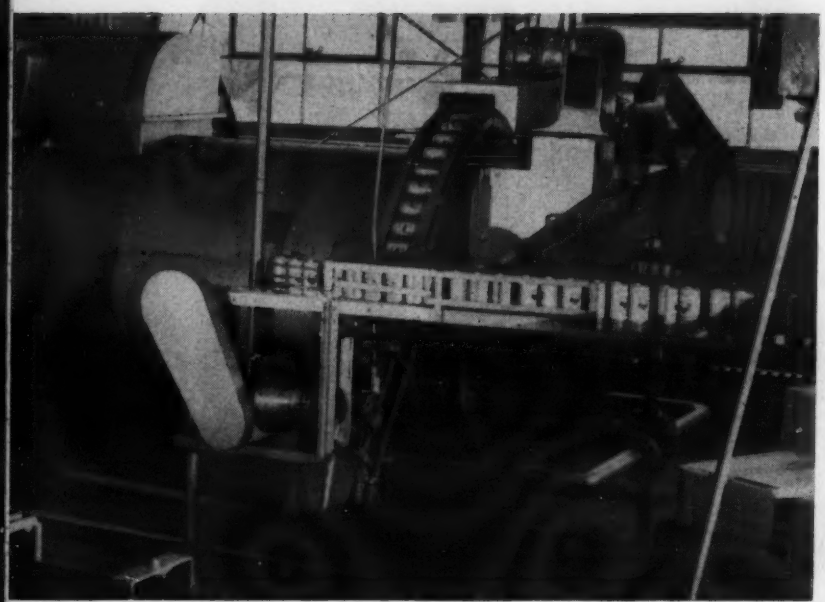
How Shasta uses canned 'pop'

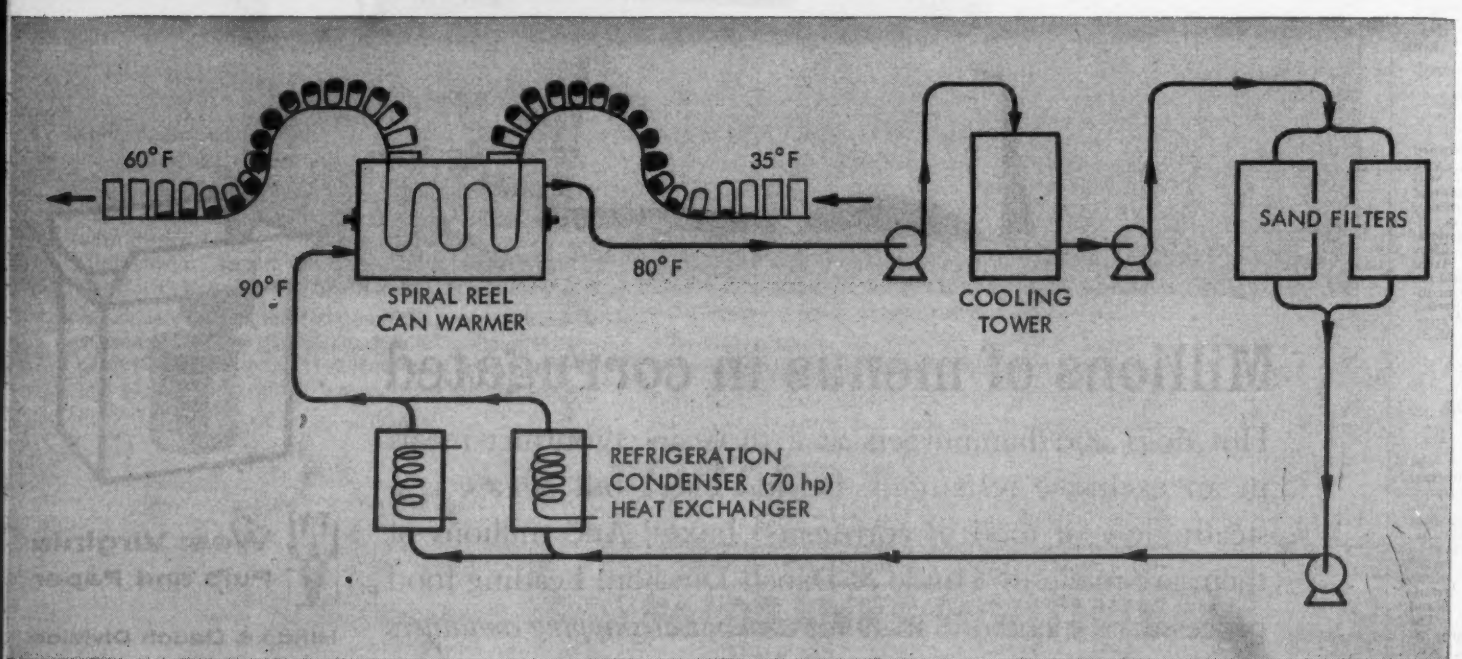
Cold-filled cans cool condenser water in spiral-reel unit—to gain both heating and cooling requirements

Eliminated need for plant addition, new boiler, and additional cooling tower



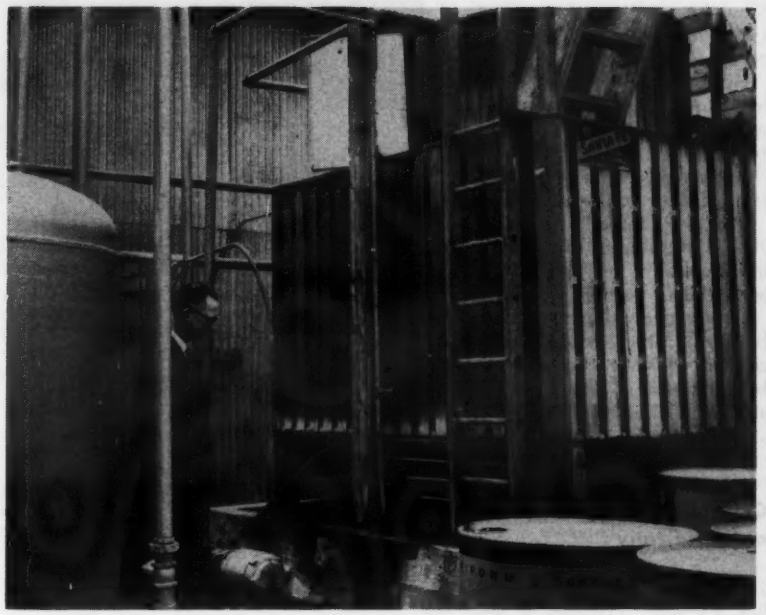
Fully enclosed *can warmer occupies same area as former belt-type, but has twice the capacity. Cans enter top right of can warmer, are continually rolled inside spiral-reel unit to facilitate heat exchange, and leave at opposite end*

Flow diagram *for warming canned pop with "spent" cooling water from condenser*



to cool condenser water

FRED A. KARR, Vice President, Production
S. P. TACCHINO, Executive Vice President
Shasta Beverage Div., Consolidated Foods Corp.
KARL ROBE, Associate Editor



Only partial *capacity of this cooling tower is now needed—but refrigeration HP has doubled. Filters for water reuse are on left*

PROBLEM: Canned carbonated beverage production, in which Shasta Beverages, San Francisco was an early (1953) entrant, expanded to the point that additional plant capacity was necessary.

Last year Shasta doubled their production capacity by replacing their 34-valve filler with a new 50-valve Meyer filler to operate at 400 cpm.

This projected change would have meant doubling the existing refrigeration capacity, adding a new cooling tower and putting in a new boiler . . . if the existing operations were followed.

Carbonated beverages are canned while cold (approximately 35° F) to retain carbonation during filling. After filling the cold cans must be warmed to prevent condensation and rusting on exterior.

This had been accomplished in a draper-belt cabinet with overhead water sprays. Hot water at 190°F was used. Cans were warmed approximately 25°, while water was cooled to 180°, then reheated and recirculated.

Faced with necessity of adding a new cooling tower to take care of a new 40 HP refrigeration system, and of adding a new boiler to heat an additional 200 cans/ minute, Shasta saw an opportunity to apply regenerative heat exchange.

Solution: Key to Shasta's new operations (see diagram) is the can warmer. Shasta wanted maximum can warming in minimum space, so an FMC continuous atmospheric cooker—the same type used in canneries for cooking and cooling cans—was chosen.

Cans enter cooker (which Shasta operates as a can warmer) directly from closing machine via a flighted chain, through a rubber star feeder device.

Inside, cans roll on their axes in a spiral track around periphery of the shell, conveyed by a rotating reel turning on a central axis.

As cold cans advance in spiral track of shell, they are subjected to warm water from refrigeration condensers in a counterflow manner. Agitation of cans' contents coupled with counterflow travel of the warmed water effects an extremely efficient heat exchange—cans are warmed and the water is cooled.

Spiral track and reel are completely enclosed in round shell which is two-thirds full of water.

Product enters at approximately 35° F, is warmed to 60° or more. Water from condensers enters at around 90°, leaves at approximately 80°.

A 5 hp pump conveys water to existing cooling tower. From tower, flow is divided into two sand-bed filters which remove accumulated foreign material before return to refrigeration equipment.

Sand filters are back-flushed once a week with clear water to remove accumulated materials.

Water from two refrigerating compressors totaling 70 HP is used in the can warmer/ cooling tower cycle. A third compressor, 30 HP, uses cooling tower for its entire cooling load.

With the cold cans taking over most of the cooling load, cooling tower is now operated at only partial capacity.

Fan is no longer required, and water is flooded over baffles, since evaporative cooling is no longer necessary. In effect, tower operates as an atmospheric heat exchanger.

Results: Shasta has doubled production capacity of canned carbonated beverages without requiring the additional boiler or a second cooling tower.

What is more, they have reduced per unit operating costs drastically. Single operator handles the doubled

FMC spiral reel continuous can cooker, used as a can warmer at Shasta, is product of Food Machinery & Chemical Corp., Canning Machinery Div.: Western — P. O. Box 1120, San Jose 8, Calif; Eastern — Hoopeston, Ill.
7284 on Reader Service Slip.
Meyer Dumore 50-valve can filler is product of Geo. J. Meyer Manufacturing Co., Cudahy, Wis.
7285 on Reader Service Slip.

production. Fuel, water and treatment expense of a second boiler has been obviated, in addition to savings on capital expenditures for boiler and cooling tower.

Perhaps equally important, the squeeze for new plant addition was alleviated, as no more plant space was required for the additional capacity (with exception of the 40 HP compressor.)

System provides more uniform temp control of cans and warming medium, and greatly reduced the water loss from evaporation which occurred from draper cooler and tower.

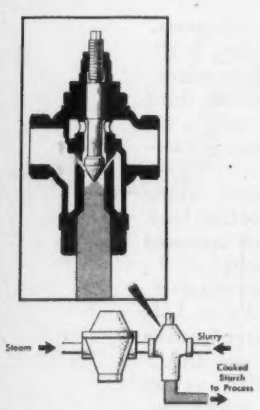
Positive infeed and discharge eliminates tipping and misalignment of cans which occurred in belt-type warmer.

Can warmer capacity could be further increased if necessary to 500-600 cpm or more by increasing size of unit slightly. END

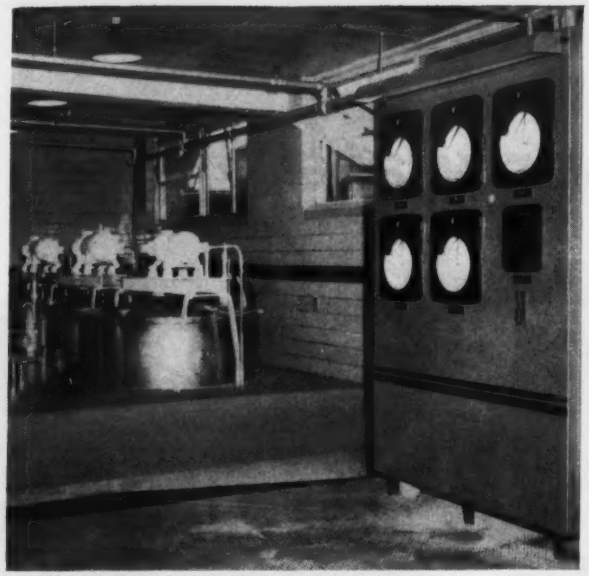
Cook starch continuously, automatically

Staley Automatic Jet Cooking Systems produce a continuous flow of starch paste with consistently uniform concentration, temperature and viscosity.

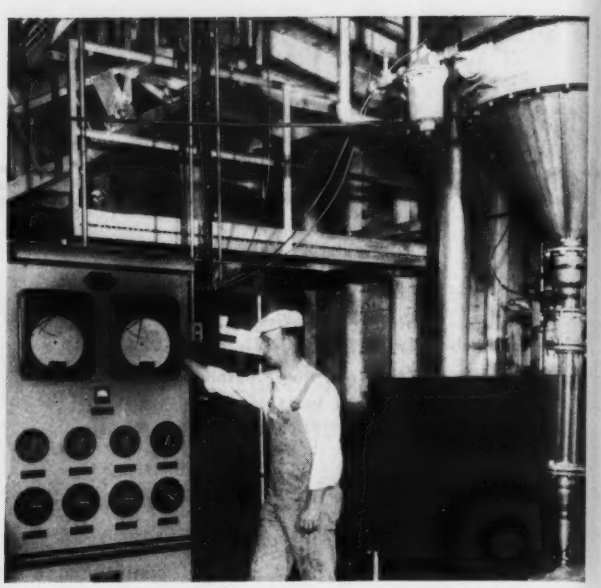
Systems are adaptable for



In Jet Cooker, starch slurry enters through round holes near top and surrounds flow plug, forming thin, cylindrical stream. As slurry flows downward over a cone, it is struck by high-velocity steam jet entering through ring that encircles cone. Steam instantly penetrates thin slurry film causing uniform, rapid cooking



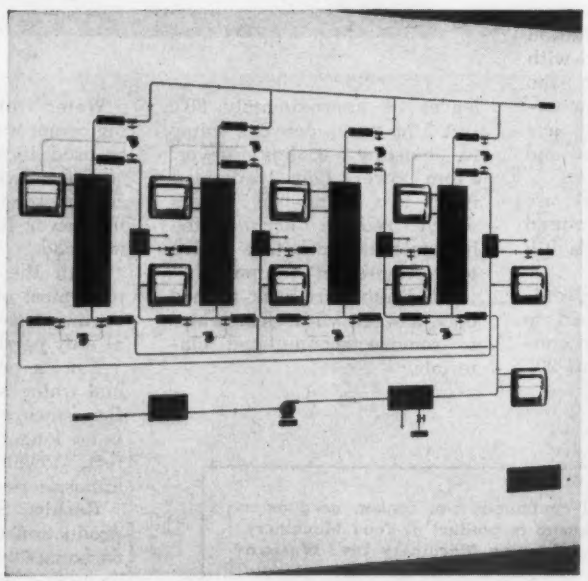
MILK PROCESSOR — TENNESSEE Foxboro 6-instrument cabinet controls milk fore-warmer temperatures with Dynalog* Electronic Instruments. 2-, 4-, or 6-instrument cabinets can be installed individually, or in combination — provide complete centralized control of any food process, large or small.



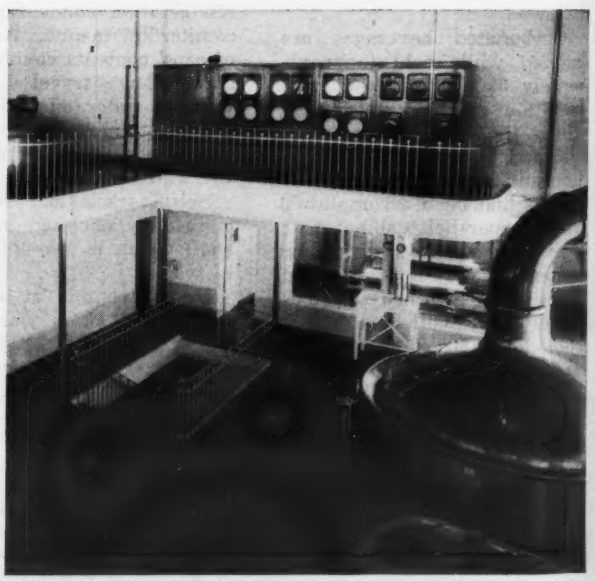
FOOD PACKER — CALIFORNIA Automatic control of process evaporator is easily handled from the Foxboro cabinet. Integrated control system, specifically designed for the process by Foxboro, assures perfect quality and flavor of concentrate. **Grouping of related controllers and indicators** results in easier operation, simpler maintenance.

For any food plant -

an integrated Foxboro



COFFEE PROCESSOR — NEW YORK This centralized control panel has its graphic diagram painted on a formica plastic background, permitting easy modification of the diagram should process changes occur. **Painted formica panels** are only one of several types of graphic control panels available from Foxboro.



BREWERY IN MEXICO Complete Foxboro centralized control system simplifies operation of rice and mash cookers, hot and cold water tanks, lauter tubs, and brew kettles. Air tubing is neatly formed and fitted to permit easier servicing and maintenance. System was designed and assembled in Foxboro, Mass. — shipped in sections for installation in Mexico.

either bagged or bulk starch, and are custom made to fit needs and specific requirements of plant for which they are built. Latest applications and modifications of system are described and illustrated in 18-page Technical Bulletin B32, released by A. E. Staley Manufacturing Co.

Brochure describes advantages and features of system in first part. In second part, it presents a detailed description of the systems and part three contains various applications.

7287 on Reader Service Slip.

How to solve flow problems

Basic engineering calculations for steam, liquid, gas

Flow Engineering Handbook, third edition, has basic flow calculations rearranged for easy reference, and in addition to orifice plates, includes other primary measuring devices.

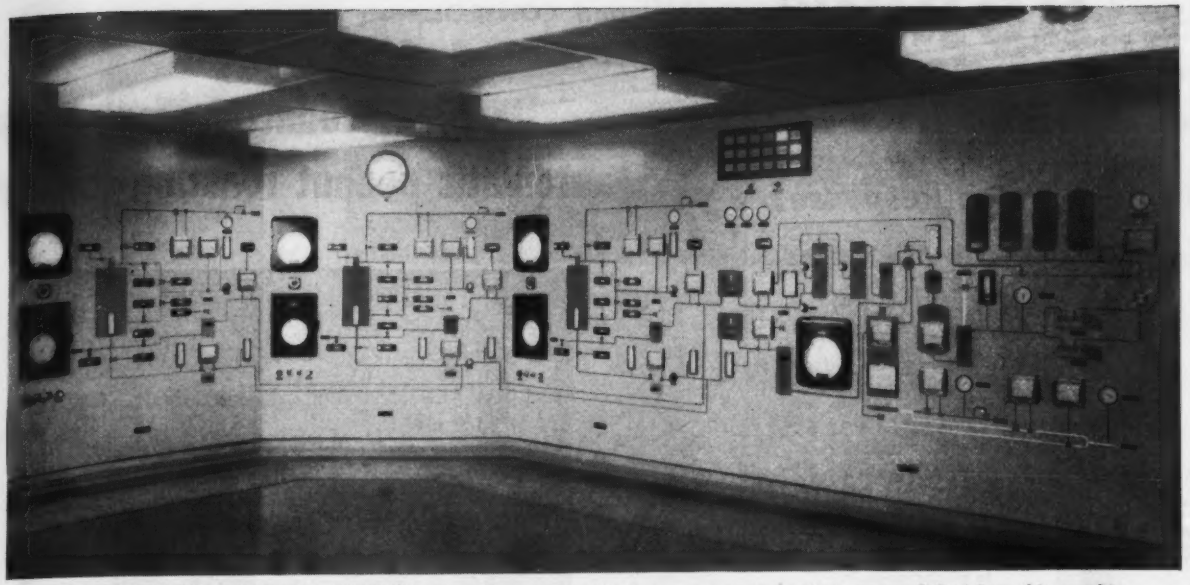
It has separate chapters on steam-, liquid- and gas-flow calculations, each with all necessary data to calculate or check an orifice-plate installation.

Within each chapter, three solutions to flow problems are outlined: an approximate check, a nominal orifice-bore calculation and a precise orifice-bore calculation.

Handbook, 170 pages, also has chapters on selection of primary flow elements and recommended locations, coefficients for orifice plates as well as summary of equations, nomenclature and conversion factors. Numerous schematic diagrams, graphs, charts and tables are included.

Book is available at $7.50 from Brown Instruments Division, Mail Station 0280, Minneapolis-Honeywell Regulator Company, Wayne & Windrim Aves., Philadelphia 44, Pa.

Products & Packages pages 8, 9, 10



VEGETABLE OIL REFINERY — ILLINOIS Complete control of hydrogen generation units is accomplished from this graphic panel. Small-case Consotrol* Recording-Control Stations are installed right in the process diagram — linked to their appropriate measurement and control points by colored lines — resulting in easier operation and better process supervision. **All back-of-panel connections** are plainly marked for quick and easy identification.

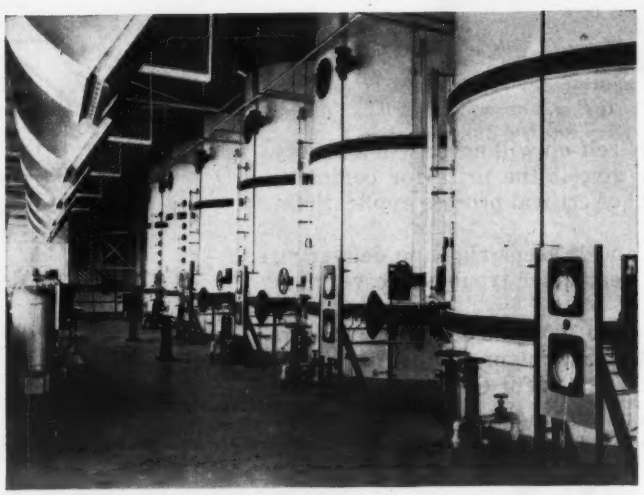
for every food process

Packaged Control System

Complete packaged control systems providing centralized operation from one convenient location! It's the trend that's streamlining the efficiency of food plants today.

Foxboro custom-engineered packaged control systems make it easy. Years of application engineering experience insure that instruments are exactly suited to your process — shipped already mounted in cabinets or panels, completely piped and wired. Only power and process connections are needed to put them into operation. This simplified installation, plus the operating convenience and low maintenance of these custom-engineered control systems keep cost at a minimum.

Full details on Foxboro Packaged Control Systems are now available in a new illustrated bulletin. It contains complete information on the design and construction of cabinet and panel units . . . as well as Foxboro's rigid requirements for high quality piping and wiring. Write for it today. The Foxboro Company, 928 Neponset Ave., Foxboro, Massachusetts, U.S.A. *Reg. U.S. Pat. Off.



SUGAR PLANT — CALIFORNIA Local control for these vacuum pans is provided by individual panels for better operator supervision. Heavy gauge steel panels protect instruments and accessories from accidental damage.

FOXBORO REG. U.S. PAT. OFF. **INSTRUMENTATION FOR THE FOOD INDUSTRIES**

7286 on Reader Service Slip.

"WORK HORSE" DEPENDABILITY

...coupled with Race-Horse Response!

- **Extra Power** for higher pressures
- **Greater Sensitivity** to minor changes in controlled variable
- **Fast Response** to load changes
- **Single-Seated Valve** fully balanced for dead-end shut-off
- **40° Adjustment Ranges** from −35°F. to +425°F.
- **Nine Styles** including one for *your* application

Our sturdy, efficient 1004 self-op will never win a beauty contest . . . but you'll sure give it the prize for complete, low-cost temperature control of critical process applications.

It's simple and rugged, and it keeps right on delivering the performance you need, year after trouble-free year.

Get the facts and specs on the 1004 and other Robertshaw Regulators that mean better control of temperature and pressures in process plants. Just ask for *Catalog* PG-A.

Robertshaw

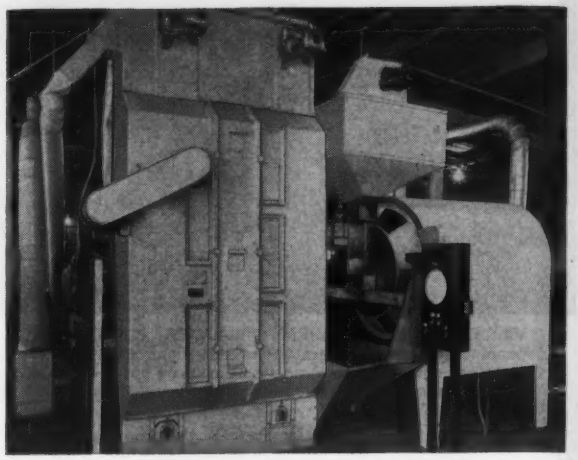
MR. CONTROLS

Robertshaw-Fulton Controls Company

FULTON SYLPHON DIVISION • KNOXVILLE 1, TENNESSEE

7288 on Reader Service Slip.

Doubles production, enhances automatic peanut roasting-cooling

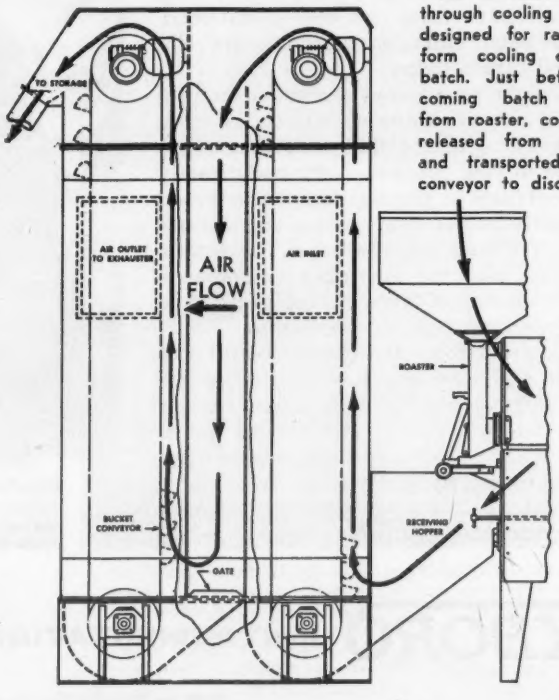


Automatic peanut roasting-cooling system at Shedd-Bartush Foods has color-control unit, center, which governs all operations as well as recording time and temperature cycles.

When nuts in roaster reach predetermined temperature, controller opens discharge door so that peanuts flow to cooler-receiving hopper. After all nuts have discharged, door is automatically closed, gate from charging hopper above roaster starts to open and new batch flows into roaster.

Cooler has two separate internal conveyors. From receiving hopper, first conveyor moves peanuts to top center of cooler where they are dumped into central, perforated cooling area.

Air is continuously drawn through cooling area which is designed for rapid and uniform cooling of an entire batch. Just before next incoming batch is dumped from roaster, cooled nuts are released from cooling area and transported by second conveyor to discharge spout



quality with system

- **Ups output from 360 to 720 lb/20 min without increase in floor space**
- **Attains improved color, taste uniformity**

G. F. HEUFELDER
Director of Peanut Operations
Shedd-Bartush Foods

TO INCREASE operating capacity and improve uniformity of peanut roasting, Shedd-Bartush Foods, Louisville, Ky., two years ago installed a new automatic peanut roasting and cooling system.

Developed by The Bauer Bros. Co. of Springfield, Ohio, the prototype of this system was installed by us as an experiment — an experiment that proved to be highly successful.

Formerly we roasted 360-lb batch of nuts every 20 minutes, and color which was regulated by instruments, as well as loading and unloading required manual operation. Now we roast 720-lb batch in same period of time and in same floor space.

Further, all material handling is mechanical and since roasting time is automatically controlled, losses from over or under roasting are practically eliminated.

Operation of system — whose principal components are radiant roaster, automatic cooler and color-control unit, see photo above, left — is started by positioning set-point index on controller and pushing starter button.

Ray-O-Matic roaster automatically roasts and discharges peanuts at proper time for maximum flavor. To conserve fuel, roaster's gas valve is automatically opened and

YARWAY news briefs

Valve literally "floats on condensate load"

USE THIS YARWAY STEAM TRAP TO KEEP YOUR DRYERS, COOKERS, TANK COILS AND OTHER PROCESSING EQUIPMENT OPERATING AT PEAK EFFICIENCY

Yarway Series 60 Impulse Steam Traps are the traps "designed with high production in mind." They get processing equipment hotter, sooner—and keep it hot. Here's how:

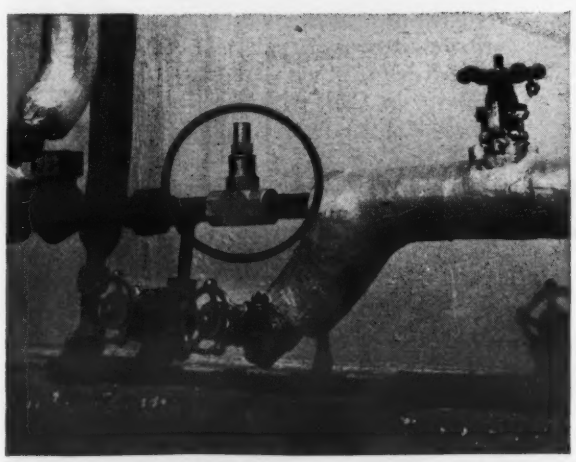
The only moving part, a small stainless steel valve, literally "floats on the condensate load." When equipment is started up, and condensate load is heavy, it opens wide and discharges at full capacity to bring equipment to operating temperature as quickly as possible.

In operation, it continuously senses condensate temperature, discharging each bit of condensate as it forms instead of storing up a bucketful. Result—higher temperatures, more even temperatures, more productive equipment.

Other Yarway features—small size, light weight, good for all pressures, low maintenance, stainless steel.

Yarway pioneered the impulse trap with its unique thermo-dynamic principle over 25 years ago. Most users find among Yarway's full line of impulse traps the profitable and productive solution to their steam trapping problems—you can too!

You can get Yarway's latest steam trap Bulletin T-1743, or a free 60-day trial of any Yarway Steam Trap, by writing Yarnall-Waring Company or contacting your local Industrial Distributor.


¾" Yarway Impulse Steam Trap draining tank coils on sulfur storage tank, 175 lbs. pressure

YARWAY OFFERS IMPULSE STEAM TRAPS FOR THESE SPECIFIC OPERATING CONDITIONS

AVERAGE CONDENSATE LOADS	EXTRA HEAVY CONDENSATE LOADS	LIGHT CONDENSATE LOADS
Series 60	Series 40	No. 30

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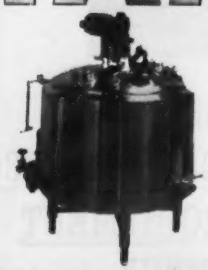
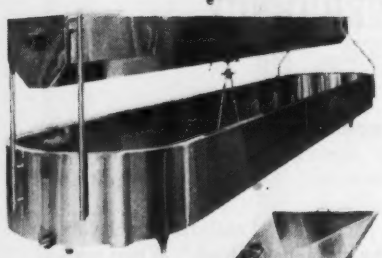
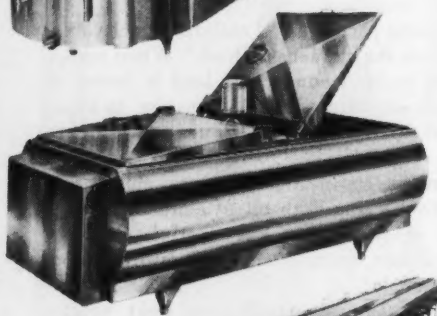
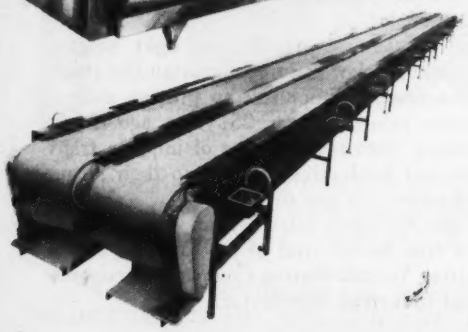
STAINLESS STEEL









FABRICATED TO YOUR SPECIFICATIONS

What do *you* need in stainless steel? Storage tanks? Processing equipment? Whatever it might be, Paul Mueller Company's master craftsmen in stainless steel can build it to fit your particular needs.

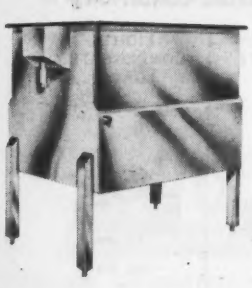
We have the facilities (130,000 square feet of plant area on 10 acres, housing all the necessary up-to-date machinery) to custom-fabricate almost anything you might need . . . and just enough old-fashioned pride of workmanship to be satisfied with turning out only the finest quality.

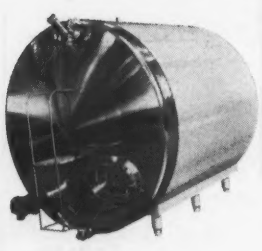
Our diversity of experience, centralized location and fabrication know-how have proven invaluable in serving many different companies, in a wide variety of industries, throughout the country. Often our own engineers, with their specialized knowledge, have been able to make significant improvements over original specifications.

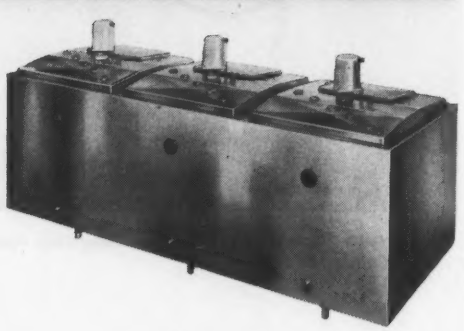
Stainless Steel

Let us help you solve your equipment problems with custom-fabrication. Your inquiry will be answered promptly and references forwarded on request. Write directly to Paul Mueller, President, Paul Mueller Co., Springfield, Mo.

PM PAUL MUELLER COMPANY







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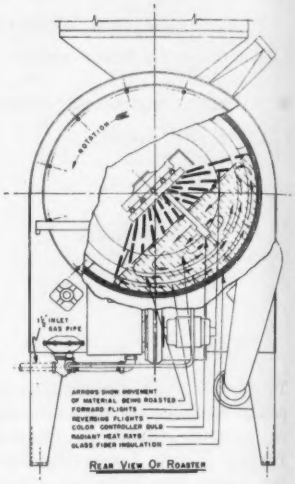
closed by controller for each batch of nuts. In producing 1000 lb of peanut butter stock, we use approximately 375 cu ft of gas.

Roasted peanuts are discharged directly from roaster into receiving hopper of automatic cooler. Cooler requires only one-fourth the floor space of other cooling equipment, yet handles more than a ton of stock per hour.

Completely enclosed, cooler has conveyors consisting of link-type chain and molded nylon elevator buckets for greater sanitation, see diagram.

7291 on Reader Service Slip.



REAR VIEW OF ROASTER

In Ray-O-Matic roaster, peanuts are roasted by reflected radiant heat with an absolute minimum of carbon deposit. Burners in multiple arrangement inside roaster's revolving cylinder burn gas at high combustion efficiency with a flame that is practically invisible. Burners produce a comparatively dry surface on nuts and uniform color penetration. Roaster is equipped with flame-failure protection system

Help for controlling relative humidity

Comprehensive 72-page catalog, Precision Measurement and Control of Relative Humidity, presents instruments and instrument systems for indicating, recording and controlling humidity.

Released by American Instrument Co., Inc., Catalog

661 is divided into three sections, the first of which covers humidity measurement and control systems. It contains twelve typical and tailored hygrometer systems.

Second section covers electric hygrometers, the instruments and their elements. Section three presents, among other instruments, the Humistat, a low-cost electronic controller, and the Hydrotector for indicating moisture content of sealed packages without opening container.

7292 on Reader Service Slip.

Automatic, high-speed color measurements

Automatic color-measurement equipment can differentiate color variations at rates as high as 30 pieces per second. Well suited to feedback process control, continuous color inspection, grading and sorting, equipment should be useful in classifying incoming fruits and vegetables.

Information on this equipment, which operates on new Green-Bartlett technique, is presented in two four-page brochures. Colorimetry Automated for Industry covers general product sorting capabilities; High Speed Automated Color Measurement and Sorting describes technical details and applications of colorimeter.

Literature is available from Colorimetry Division, Allied Research Associates, Inc.

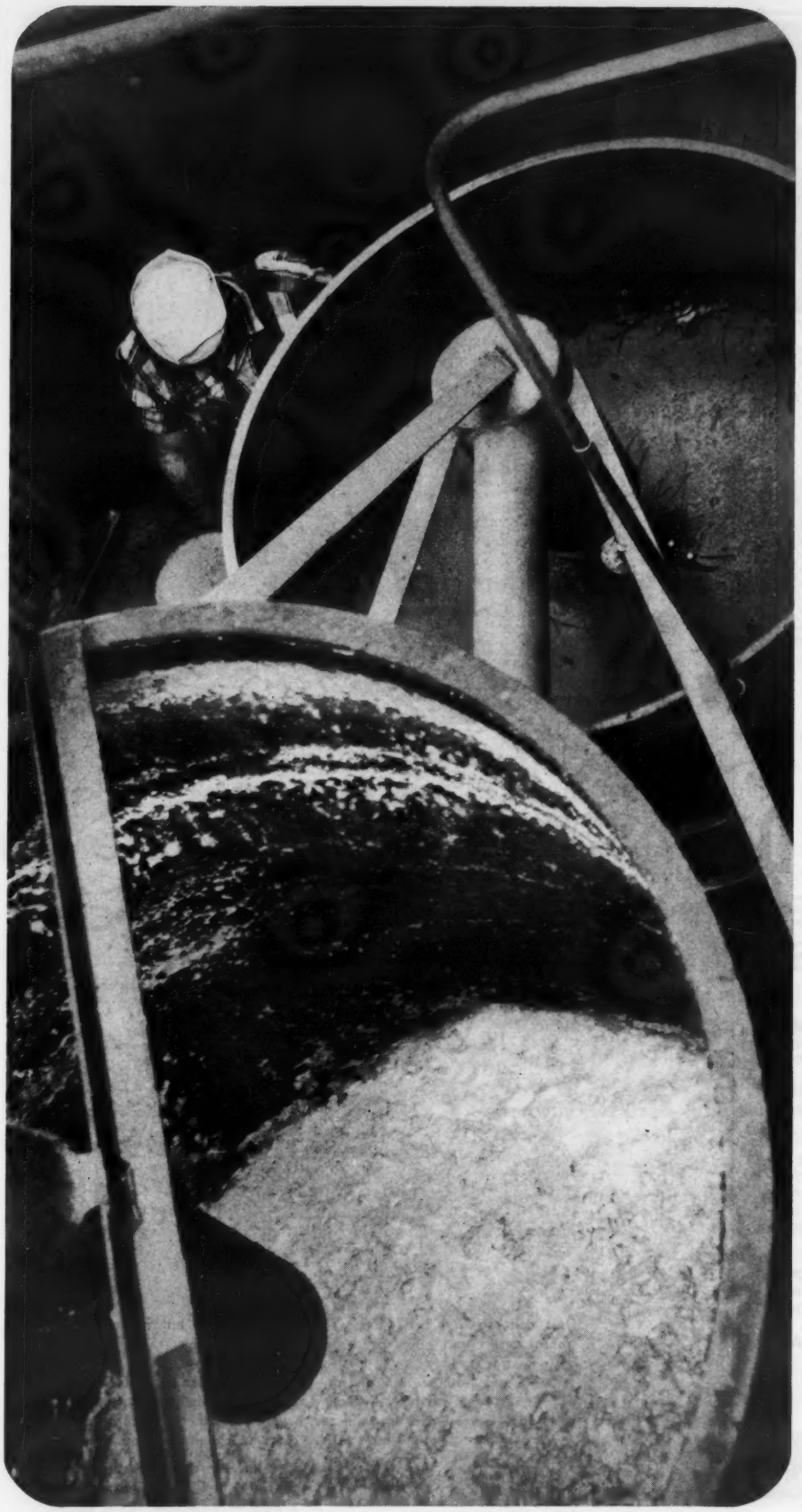
7293 on Reader Service Slip.

Mixers, mills to cut dispersion time

Complete line of colloid mills and Dispersator® Mixers, useful in shortening time for dispersing, emulsifying, disintegrating and homogenizing, are presented in four-page brochure published by Premier Mill Corporation.

Illustrated bulletin contains information on application of mills and mixers. It discusses features and methods of operation, and tabulates sizes and specifications.

7294 on Reader Service Slip.



Van Camp Sea Food Co. solves disposal of 24,000 gallons of waste water per hour...

One 48-inch SWECO Vibro-Energy Separator cuts time in half, saves space, power and maintenance in efficient waste processing for Van Camp Sea Food Co. Port of Los Angeles. Nineteen other SWECO units have served this major packer of Chicken of the Sea brand tuna, in production operations throughout the plant, for as long as 10 years. Since SWECO has been on the job, costly installation, down-time, screen blinding and transmitted vibration have been alleviated — all serious problems with previous hexagon rotors. Greater recovery of solids from "stick water," for recanning, meal or fertilizers, has been an added profit factor. For full details, application data, or free screening demonstration in *your* plant with *your* materials, write to

SOUTHWESTERN ENGINEERING COMPANY
4800 Santa Fe Ave.
Los Angeles 58, Calif.
Dept. 254

SWECO

✦ Vibro-Energy separators, grinding mills, finishing mills ✦

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316
STAINLESS
STEEL

Welded Bourdon Tube and Pressure Connection

A NEW ADDITION to MERCOID PRESSURE CONTROLS

Series D-41, 243, 541

316 stainless steel welded Bourdon tube. ¼" (316) stainless steel pressure connection. Nickel plated mechanism. Outside adjustments. Calibrated dial. Hermetically sealed mercury contact.

Operating ranges: 30" vac.-75 psig; 10-100 psig; 30-400 psig; 75-800 psig. and 100-1000 psig.— with varying differentials and electrical capacity to meet your application.

Three case styles: General Purpose NEMA 1; Weather-Proof NEMA 1A, 2, 3, 4; Explosion-Proof Class 1 Group C, & D; Class 2 Group E, F, G, NEMA 7, 9, 9A.

WRITE FOR BULLETIN 019

THE MERCOID CORPORATION
4211 Belmont Ave., Chicago 41, Ill.

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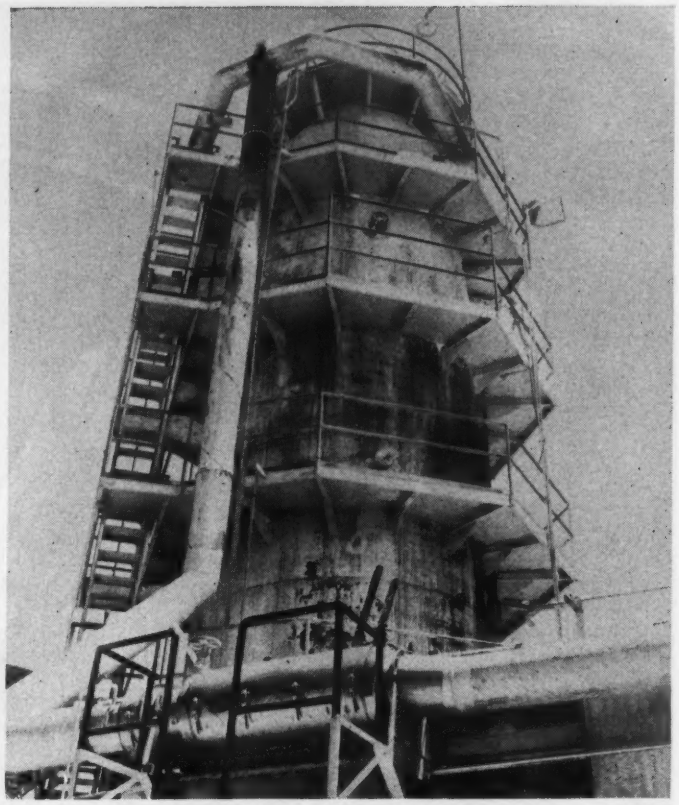
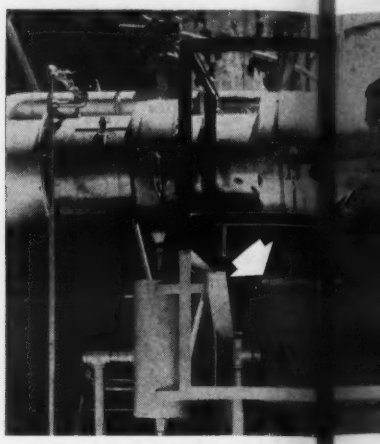
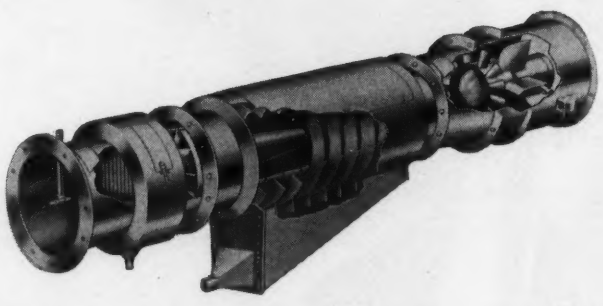


4000 cfm of dust-laden CO_2 are cleaned by in-line cylindrical wet-type dust collector at Clarksburg, Calif. plant. Small, 4000-cfm unit, see insert photo, is installed directly between lime kiln and 188-hp turbo blower; collects and passes dust and water from gas into sump, arrow. Scrubbers are made from mild or stainless steel and have quick-opening access doors for easy accessibility. They range in capacity from 2500 to 64,000 cfm



Small in-line dust collector eliminates process shutdowns



Dust collector has two main sections: mixer and eliminator. In first section, two spray nozzles saturate gas with water. An impingement element is so constructed with vertical stainless wires that no straight-line path exists. Thus entering dust particles strike and pass through element becoming encased in water droplets and increasing in size.

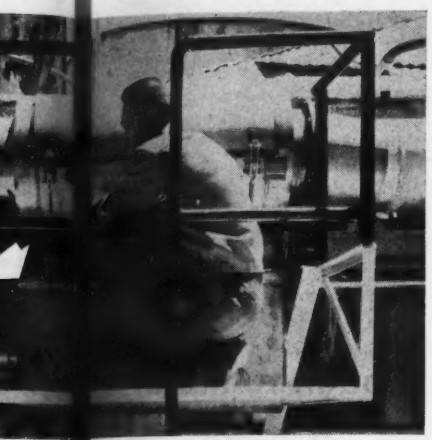
As droplets leave impingement element, they enter second section where they are given a centrifugal swirling motion which separates all water droplets. Droplets are driven to wall of cylinder where sealed traps capture and discharge them to sump.

If relatively small pressure drop, usually 4 to 5 WG, is undesirable, a booster axial-flow fan is added. In suction line at Clarksburg plant, booster fan was not required

Scrubs CO_2 from lime kiln enroute to sugar-beet juice purification

PROBLEM: In beet-sugar production, impurities in extracted juice are removed by adding lime slaked in water and bubbling carbon dioxide (CO_2) through mixture. The CO_2 is produced in lime kilns on premises and is compressed by a turbo blower before being used.

Since gas comes directly from kilns, it carries lime dust and water which deposit in suction line, casing and on impeller of blower, thereby reducing its capacity. Further, unbalancing and erosion of impeller take place necessitat-



Verified by
Technical Staff of
American Crystal Sugar Company

ing replacement — accompanied by process shutdown.

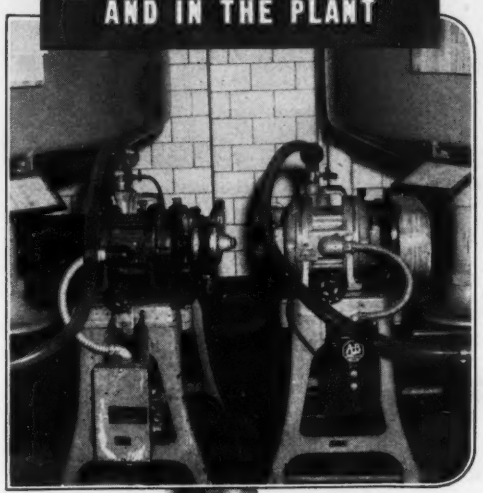
Solution: Dust and entrained water are now removed in a highly efficient wet-type dust collector at the Grand Island, Nebr. plant of American Crystal Sugar Company of Denver, Colo. In this unit, dust is first entrained in water droplets and then removed by centrifugal action as described in diagram caption at left.

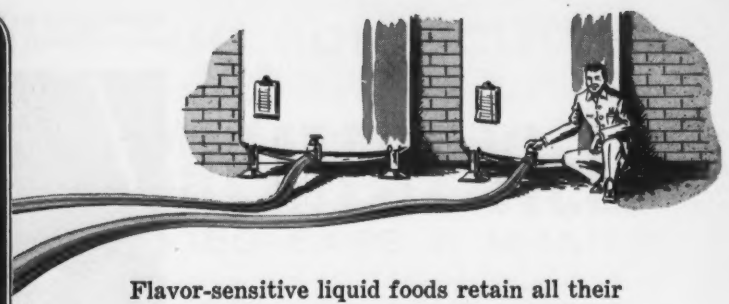
Dust collector, a Joy Microdyne Scrubber, is made by Western Precipitation Division of Joy Manufacturing Co., P.O. Box 2744, Terminal Annex, Los Angeles 54, Calif.

Compact unit collects over 99 per cent of all dust particles five-microns or larger, 92 per cent of two-microns particles

IN THE LABORATORY

AND IN THE PLANT





Flavor-sensitive liquid foods retain all their purity and flavor when piped through Tygon Flexible Plastic Tubing. There is no contamination — no metallic flavor pick-up. Tygon is completely safe for foods because it is chemically inert, non-toxic and resistant to all food acids and alkalies. This has been proven in use in scores of food processes. Small wonder that

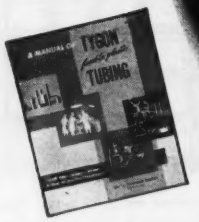
FLAVOR-SENSITIVE LIQUID FOODS ARE SAFELY "PIPED" THROUGH

TYGON TUBING

leading authorities everywhere have approved Tygon Tubing for use with food products.

This versatile piping medium provides faster, low cost installation too, because it may be installed in long continuous runs without joints or couplings. Flexible, it easily adapts to any layout, and its glass-like clarity provides instant visual inspection of flow at any point. The polished bore, plus the absence of joints and sharp turns, eliminates clogging (especially in the case of semi-solids) and increases flow rates. Even cleaning is easier: Tygon lines may be disassembled, cleaned or steam sterilized—and reassembled in minutes!

Sixty-six bore sizes (1/16" to 4" I.D.) accommodate virtually every plant or laboratory requirement. Simple clamp fittings make for fast, easy coupling and special types of Tygon are available for special service such as vacuum or pressure work.



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PLASTICS AND SYNTHETICS DIVISION

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AKRON 9, OHIO

225-E-3

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Dorr-Oliver advanced design filtration equipment gives A.E. Staley Mfg. Co.

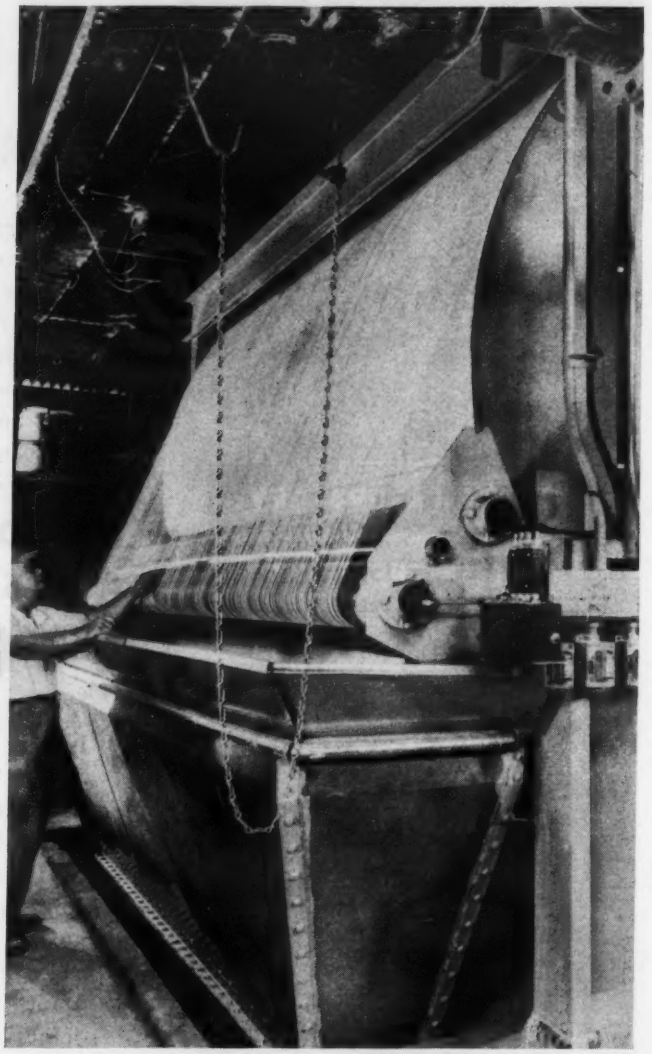
HIGH CAPACITY STARCH PROCESSING

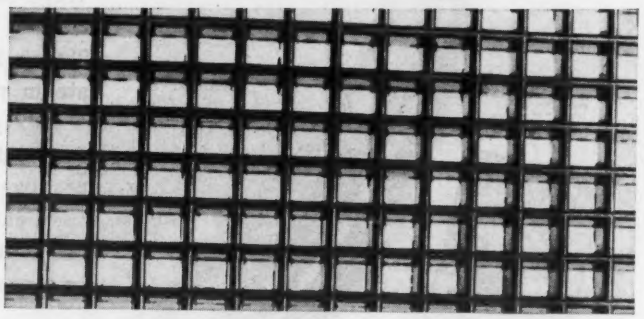
Modernization of starch processing at A. E. Staley Mfg. Co., Decatur, Ill., includes high capacity dewatering prior to drying provided by two Oliver String Discharge Type Filters.

These stainless steel filters are typical examples of the flexibility offered by Dorr-Oliver equipment in meeting specific job requirements. Special features include the new D-O molded rubber sectional waffle-type drainage deck. This design provides the greatest amount of open drainage area available in any type of grid, resulting in high filtering capacity and exceptionally low filter cake moistures. The smooth, rounded rib surfaces offer excellent support for the filter media, increases cover life and provides for easier cleaning without removing grids. The special rubber composition eliminates the problem of corrosion at a most vulnerable point.

For more information on the complete line of D-O equipment for the starch industry, write Dorr-Oliver Incorporated, Stamford, Connecticut.

BELOW: One of the two Oliver String Discharge Filters used for starch dewatering at A. E. Staley Mfg. Co.





ABOVE: New waffle-type rubber drainage grid installed on the above filters. Approximately ½" square openings provide exceptionally large drainage areas. A sample of this grid will be sent on request.

DORR-OLIVER

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

7298 on Reader Service Slip.

and substantial amounts of smaller particles.

Results: Scrubber has eliminated process shut downs during approximate 120-day processing season and has brought savings in maintenance. American Crystal Sugar's engineers report that inspection of turbo blower showed its suction line and casing free of dust buildups and erosion of impeller had been stopped.

Successful application of scrubber at Grand Island plant prompted company to install a similar unit at their Clarksburg, Calif. plant, see photos previous page.

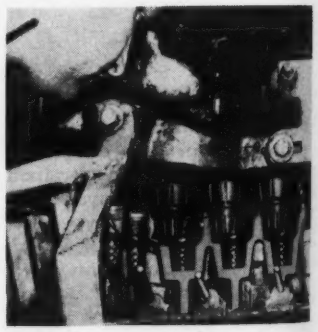
7299 on Reader Service Slip.

Coats ice-cream cone molds with Teflon to end —

Dough-to-metal sticking

Problem: At Yohay Baking Co., Brooklyn, N.Y., ice-cream cones frequently stuck to mold cores during baking, causing stoppage of production line.

Ice cream cones are molded on large circular machine having numerous three-piece molds, after which they are baked at 450°F.

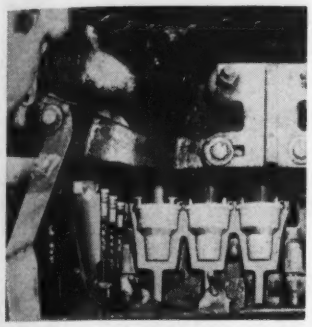


After cores and cups of ice-cream molds are coated with Teflon, cups close and dough is automatically pumped into each cup. Plunger-like core then descends into cup to mold cone

Adding additional sugar to cone dough only aggravated sticking problem.

Solution-Results: By coat-

ing cores with high-temperature resistant, anti-friction Teflon, Yohay not only eliminated sticking but is producing a more uniformly baked cone having finer sheen and color. In addition, more sugar can



Mold assembly passes through baking oven after which core retracts and cup opens. Molded cones drop onto conveyor belt leading to packing table

be used in dough, producing a better-tasting product.

According to Maurice Brenner, production manager, volume is up and waste has been reduced. Even though molding machine operates 24 hr/day, there have been no break downs.

Supplier: Tri-Point Industries, Inc., 175 I.V. Willits Rd., Albertson, L.I., N.Y.

7300 on Reader Service Slip.

Simple, vertical mixer has many applications

Conical-shaped mixer can be enclosed for vacuum drying of free-flowing materials. Mixer and its central tube can also be jacketed for heating or cooling.

Mixer-blender, called Tur-Blend, is made in eight sizes ranging from 2.88 to 185 cu ft. It has stationary, centrally located, vertical screw that lifts material from base to top. Material flows to bottom by gravity from where cycle is rapidly repeated.

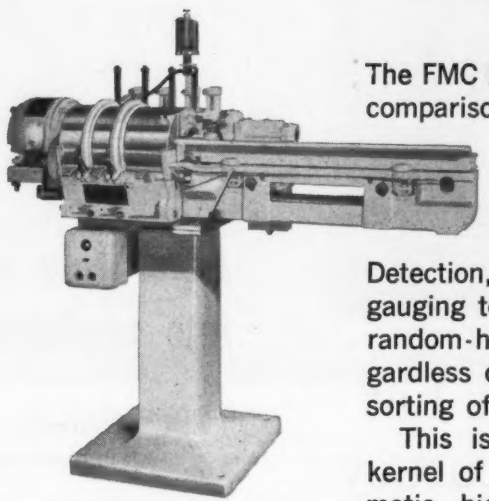
Mixer is described in detail and with illustrations in four-page brochure, New Design in Mixers, available from Goslin-Birmingham Manufacturing Company, Inc.

7301 on Reader Service Slip.

NEW FMC CORN CUTTER

FOR GREATEST YIELD
[AT 120-150 EARS A MINUTE]

AT LOWEST COST
[SAVE 30% ON LABOR ALONE]



MODEL 3AR
UNIVERSAL
CORN CUTTER
WITH
AUTOMATIC
SIZE
DETECTION

The FMC Model 3AR Universal Corn Cutter is without comparison in operating efficiency, high production and yield, low operating cost. It is the only cutter designed to handle both whole kernel and cream-style packs.

Featuring A. S. D. — "Automatic Size Detection," the new Model 3AR utilizes feed roll gauging to pre-open knives which cut mixed ears of random-harvested corn to any desired depth, regardless of length, size or taper. No pre-grading or sorting of ears is required.

This is the cutter that meticulously cuts every kernel of corn from the cob in a continuous, automatic, high-speed, no-waste operation — while fully protecting quality every inch of the way. Other exclusive features include double rotary heads, precision-balanced knives, in-motion adjustment and quick-release lever, to name a few. Get full details on the remarkable 3AR Cutter and other FMC "Stalk to Storage" specialized corn equipment.

New FMC Corn Cutter Bulletin No. 604W now available on request. Write for your copy today.

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
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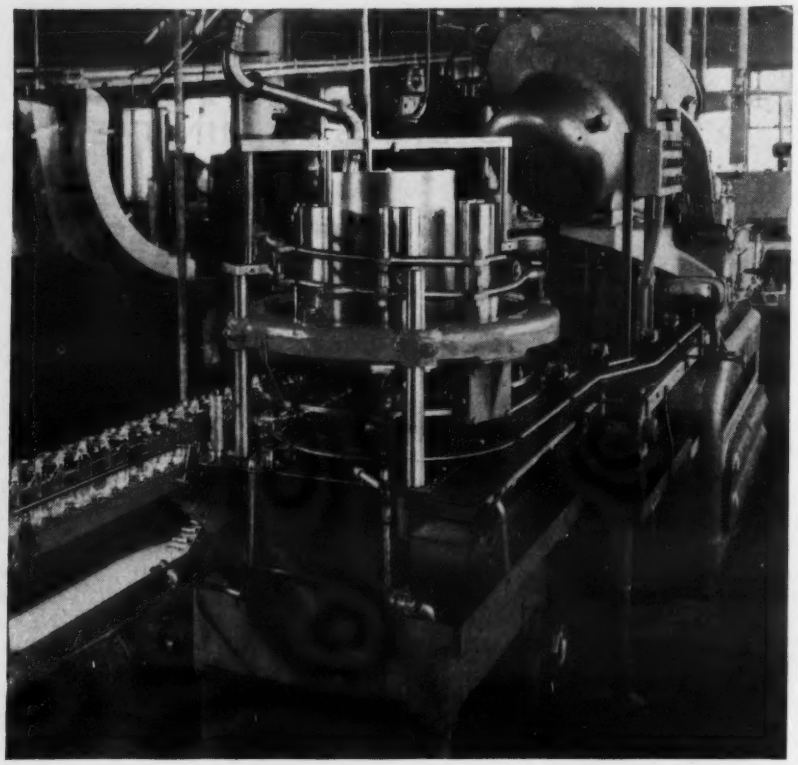
7302 on Reader Service Slip.

FLUIDICS* AT WORK



How to fill even viscous hot fudge with speed and accuracy

If you have problems filling heavy or viscous products accurately without losing speed, consider the experience of the Robert A. Johnston Company with their six-station Pfaudler® rotary piston filler.

Mr. A. O. Meyer, Plant Manager, says, "The Pfaudler filler has been giving us some very good results. We fill approximately 55 six- or eight-ounce jars per minute with heavy hot fudge without a spill. And we also package caramel, butterscotch and chocolate syrup.

"The filler takes only about a half hour to clean thoroughly. We've had very little maintenance with it. In fact, all it really needs is a routine cleaning and lubrication."

The RP-6 filler is the smallest in the Pfaudler line . . . an ideal model for filling small lots of a number of products. Change-over for various container heights takes only about 12 minutes. Other models of the rotary piston filler will handle up to 1050 cans a minute. All these fillers are rated to ±0.1 fluid ounce accuracy for most products.

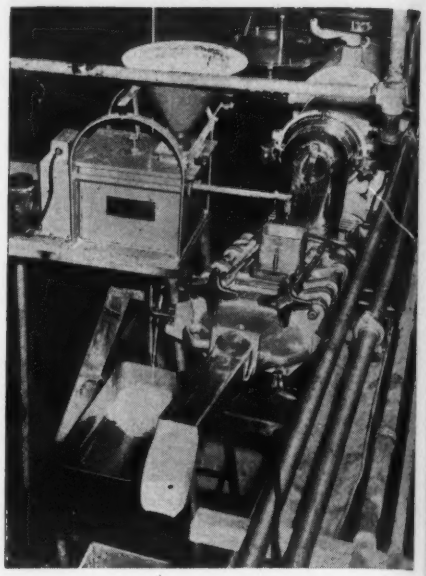
If you'd like the full story on the complete line, write to our Pfaudler Division, Dept. FP-81, Rochester 3, New York.

*FLUIDICS is the Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

PFAUDLER PERMUTIT INC.

Specialists in FLUIDICS...the science of fluid processes

7303 on Reader Service Slip.



Salt is automatically fed by ⅜-in screw of vibratory feeder into "Buttermatic" after it has been pulverized in a Mikro-Pulverizer

Accurately meters pulverized salt into continuous process

Vibrating screw feeder adds salt at uniform volume and uniform density

PROBLEM: When Saratoga Dairy, Inc., Saratoga Springs, N.Y., switched from conventional batch methods of butter making to modern continuous process, it also had to find means for feeding salt into process at a steady but adjustable rate.

Salt is pulverized to obtain rapid and complete dissolution in short space available before butter leaves butter making machine.

Solution: Metering device that feeds salt at uniform volume and density has a vibrating hopper and vibrating screw for quickly bringing mass of salt to reproducible density, see photo above.

The device, called a Vibra Screw Feeder, is made by Vibra Screw Feeders, Inc., 156 Huron Ave., Clifton, N.J. It meters dry materials at rates from ounces to tons per hour with an accuracy of one per cent.

Since butter machine, a Westfalia type Bub "Buttermatic" operates at rate of 800 lb/hr, vibrating feeder is set to deliver salt at rate of 3.2 oz/min to maintain 1½ per cent salt content.

Butter flow is checked frequently through day's operation. When flow changes, rate of salt feed is adjusted manually.

Results: According to William L. Barton, General Superintendent of Saratoga Dairy, Inc., screw feeder does a very good job of distributing powdered salt into butter machine. There is no bridging or flooding, and rate of feed is consistent and uniform.

7304 on Reader Service Slip.

Easy-reading, sanitary pressure gage

Eliminates needle oscillations with simple variable damping control

Features: Variable damping control on pressure gage stops needle oscillations for accurate reading; minimizes fatigue of internal parts to prolong life.

Damping control can be adjusted in field for service on centrifugal or positive-displacement pumps.

Gage design is simple for easy in-field maintenance.

Description: Sani-Flow pressure gage has Bourdon-Tube

Pressure gage has 3½-in. diam dial; has chrome-plated brass body that is moisture proof

gage head to which line pressure is transmitted via variable-damping adjustment and SS diaphragm. Latter is held in place between two SS, sanitary adapters by "O" ring.

Standard gage range is 0 to 160 psi. Models with other ranges as well as compound (pressure-vacuum) gages are also available.

Supplier: Chicago Stainless Equipment Corporation, 5001 Elston Avenue, Chicago 30, Illinois.)

7305 on Reader Service Slip.

Aids for automatic in-line blending

Two specification brochures, one on turbine flowmeters — which transduce liquid velocity to a millivolt signal — and the other on totalizers and batch controllers — which accept the pulse signal and totalize and control the process — have been released by Fischer & Porter Co.

Propeller-type flowmeter that is covered in six-page Specification 10C1505 has an accuracy of ± 0.5 per cent of flow rate and can be installed into pipe line in any attitude. Brochure presents performance characteristics and ma-

FOR 600° TEMPERATURES WITHOUT ANY PRESSURE!

VAPOR MODULĀTIC

HI•R•TEMP

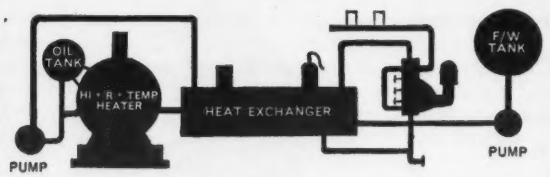
LIQUID PHASE HEATER

This Vapor Modulātic HI•R•TEMP Liquid Phase Heater uses heat transfer oils to provide dependable, automatic, accurately controlled heat transfer to 600° F., without high pressures. Burns natural gas, propane, butane, No. 2 diesel oil, or kerosene. Sizes to 13,000,000 b.t.u.

Check these advantages:

- ACCURATE TEMPERATURE CONTROL. Modulāting controls automatically maintain pre-determined temperature of heat transfer oil.
- NO WATER TREATMENT NEEDED. Eliminates cost of treatment system. No corrosion, scale, freezing problems.
- POSITIVE OIL FLOW. Rotary gear pump assures uniform circulation...prevents hot-spots, coking, sludging, oil breakdown.
- LOW INSTALLATION COST. Completely unitized, skid-mounted with all piping in place. Factory tested before shipment. Compact, lightweight...install it anywhere.
- LOW-PRESSURE VESSELS AND FLOW CIRCUITS. Saves the cost of heavy-duty piping, fittings, valves.
- COLD OIL SEAL. Expansion tank is uninsulated and isolated from main flow of hot transfer oil. Protects oil against atmosphere, sludging, deterioration.
- OPTIMUM SAFETY. Non-toxic. Built to ASME codes. Flame failure, low oil level, high temperature safety shut-off controls are standard. CO_2 quenching ring optional.
- LOW OPERATING COST. Forced-draft combustion, coiled tube design is highly efficient. No high pressures, does not require licensed engineer to operate.

here's how one vapor Hi•R•Temp, with heat exchangers, can supply your needs for processing, heating, hot water, etc.



Heated oil from HI • R • TEMP (at temperatures to 600° F.) passes through heat exchangers to provide steam for processing; at 450° for steam for heating plant and office; at 200° for hot water for cleaning, washing, other uses. Provides full, economical use of heat to lower your operating costs!

VAPOR

For complete information, send coupon today.

Vapor Heating Corporation, Dept. 7-H
80 East Jackson Boulevard, Chicago 4

Please send me Bulletin 4023 on your HI•R•TEMP Liquid Phase Heater.

Name_____

Company_____

Address_____

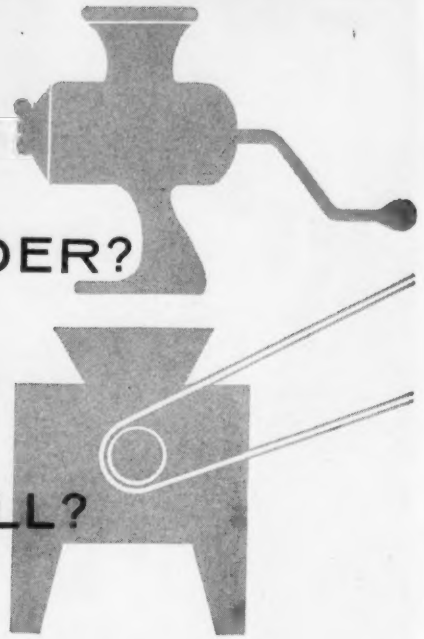
City, Zone, State_____

7306 on Reader Service Slip.

WHAT DO YOU DO TO YOUR PRODUCT?

DO YOU
CRUSH IT
IN A
MEAT GRINDER?

DO YOU
SMASH IT
IN A
HAMMER MILL?



some people don't, you know,

some people cut their product into little dices.

PICKLES for the meat industry are now cut into ¼" or ⅜" cubes.

PICKLE RELISH of high quality is now cut into ⅛" cubes or pieces of ⅛" x ⅛" x ¼".

CHEESE is now being cut into little and big dices. Roquefort cheese is easily diced at a temperature of 10°F.

MEAT with little fibre content such as bologna is cut into small dices for sandwich spreads and other products.

CHERRIES for ice cream dip or other purposes, are cut into little dices.

ALL KINDS OF FRUIT are cut into various small dice sizes for use in numerous products.

NUMEROUS PRODUCTS are now also being cut into julienne strips or thin slices with the "RA".

All of this is accomplished with the Urschel Model "RA" at capacities of up to 10,000 pounds per hour.

We'll be glad to test *your* product in our modern product cutting research kitchen. Write us today.

Model "RA" Dicer

PRECISION HIGH-SPEED FOOD CUTTING EQUIPMENT

URSCHEL LABORATORIES INC.
VALPARAISO, INDIANA

Designers and manufacturers of precision, high speed cutting equipment for food products.

7307 on Reader Service Slip.

terials of construction as well as dimensional drawings and table of capacities.

Literature also contains pre-amplifier dimensions and notes on its installation.

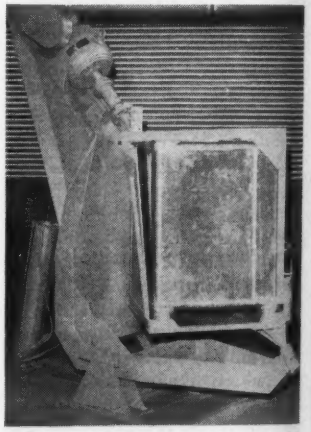
Six models in new 28600 Series of Totalizers and Batch Controllers are covered in eight-page Specification 51-2860. Brochure lists general characteristics and for each of the six models presents design features and specifications. Drawings with outline dimensions are included.

7308 on Reader Service Slip.

Blend & store in same container

Tumbles Tote Bin to effect close blending in 5 min

Tote Bin, a versatile storage, shipping and discharge container can now be used for blending and mixing by being



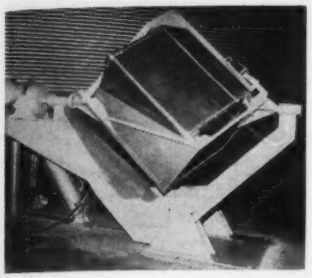
Tote Tumbler in vertical position with 46-cu ft Tote Bin placed in frame and clamped in place

placed in a Tote Tumbler. This device holds the bin, see photo above and next page, and rotates it across its diagonal axis to produce a close blend in about five minutes.

Tote Tumbler ties in with manufacturer's diverse material handling systems. By

placing bin on automatic scale, it can be fed with different materials from screw-type Tote Tilts or conveying systems. Contents can then be tumbled and taken to point of use, eliminating several operations.

Processing-material handling system, which can be



Tumbler is moved by air cylinder into horizontal position in which it rotates bin with 5-hp motor

applied to confectionary or coffee blending, is already being used in one application to mix 1200-lb batches in special 46-cu ft containers.

Supplier: Tote Systems, Inc., Division of Hoover Ball & Bearing Company, 680 South Seventh Street, Beatrice, Nebraska.

7309 on Reader Service Slip.

Wide range of separators, clarifiers for dairy industry

Complete line of Westfalia dairy processing equipment — separators, clarifiers, butter machines, cheese concentrators and automatic de-sludgers — is presented in 24-page catalog, issued by Centrico, Inc.

Main section of literature describes general construction features of separators and clarifiers, together with operating principles of both the "Liquid-Seal" and conventional hermetic-seal units.

Each machine is completely described and capacities are listed. Bowl cross-sections are shown in color.

Separate section of catalog contains tables of dimensions of all machines. There are also eight flow diagrams of typical installations.

7310 on Reader Service Slip.

Designers and manufacturers of processing equipment for the Chemical and Food industries. DRUM DRYERS • VACUUM ROTARY DRYERS • VACUUM SHELF DRYERS • FREEZE DRYERS • AUTOCLAVES • FLAKERS • ESSENCE RECOVERY SYSTEMS • And the industry's most complete line of EVAPORATORS

Is drying your problem?

A sheet of dry material as it leaves one of the drums of a Buflovak Double Drum Dryer.

Buflovak Atmospheric or Vacuum Double Drum Dryers are successfully drying a wide variety of materials. These materials may be dilute or heavy liquids of various densities and viscosities, including slurries, pastes and sludges. Proven drum dryer feeding distribution systems are available for these widely different types of materials.

Drum Drying is a dependable and economical process to convert the feed into a dried product of uniform composition. Frequently, it eliminates the need for grinding or size classification.

Film thickness on the drums is accurately controlled by regulating the clearance between them. The product dries rapidly, without being subjected to high temperatures for long periods.

Buflovak makes other types of Drum Dryers, including Single or Twin Drum for atmospheric or vacuum operation. In addition there are Vacuum Rotary and Vacuum Shelf Dryer types. Recommendations are based entirely on the type of dryer best suited to the product requirements. If special equipment is required, let Buflovak engineers design it for you. Send for Catalog 384 for the full story.

Our Customer Technical Service Laboratory solves a processing problem for someone every day

We have a completely equipped Laboratory that can help you get answers to your new drying problems or, perhaps, improve your present product. We do this for many companies. We can do it for you too. Call or write for Catalog 381 describing available facilities. Buflovak Equipment Division, 1559 Fillmore Avenue, Buffalo 11, New York.

Double Drum Dryer with Pendulum Feed (Patented).

Buflovak Equipment Division
BLAW-KNOX

BLAW-KNOX

Blaw-Knox designs and manufactures for America's growth industries: METALS: Rolling Mills • Steel Processing Lines • Rolls • Castings • Open Hearth Specialties • PROCESSING: Process Design, Engineering and Plant Construction Services • Process Equipment and Pressure Piping • CONSTRUCTION: Concrete and Bituminous Paving Machines • Concrete Batching Plants and Forms • Gratings • AEROSPACE: Fixed and Steerable Antennas • Radio Telescopes • Towers and Special Structures • POWER: Power Plant Specialties and Valves

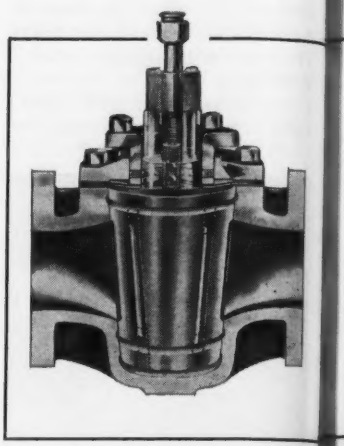
7311 on Reader Service Slip.

At E. F. Drew & Co., maintenance program . . .

Simplifies plant-wide valving

- **Quick process changeovers**
- **More - spacious valving centers**

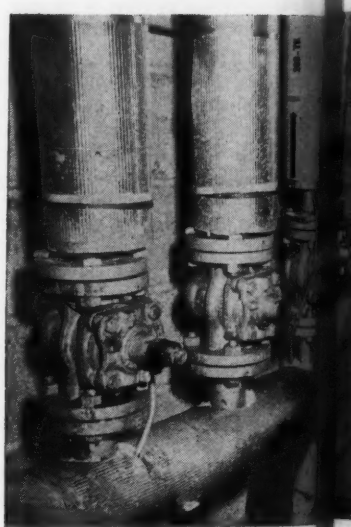
FP STAFF



HOW a program of systematically replacing old, worn-out, conventional valves with plug valves at E. F. Drew & Company "streamlines" operations while reducing maintenance is illustrated in the accompanying photos.

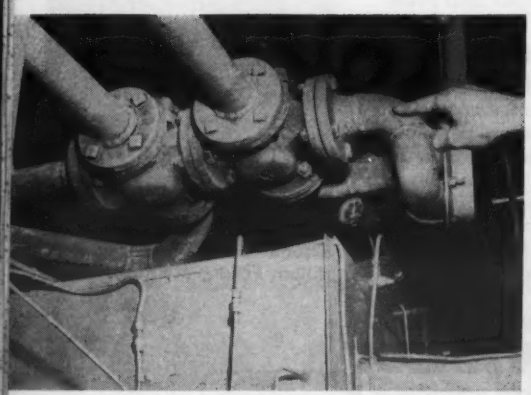
At the Boonton, N.J. edible oil refinery of E. F. Drew, vegetable oils such as corn, soy bean, cottonseed, peanut, coconut and palm kernel are refined and processed into margarines, shortenings, cooking oils and emulsifiers.

Refinery has facilities for removing free fatty acids and other unwanted materials, winterizing and/or hydrogenating, and bleaching, filtering and blending.

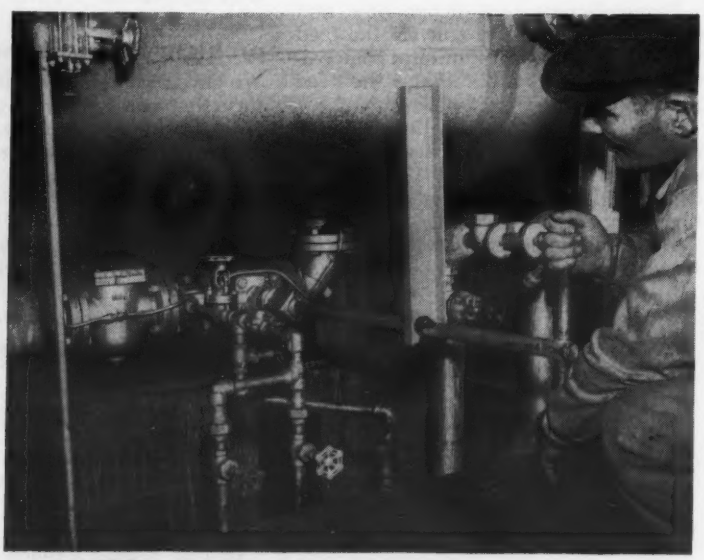


***Tight seal** is formed with help of lubricant in plug valves on oil lines to filter presses when valves are in off position.*

Since no clearance is necessary for bonnets and hand wheels as with conventional valves, plug valves can be mounted closer together



***Two four-way plug valves** replace eight conventional valves in winterizing process. Valves control flow of glycol from one or two evaporators to a diffuser and to tanks where oil is crystallized*



***Operator** adjusting out-of-the-way valve underneath process tank in hydrogenation department. Bulk of over 50 plug valves in department are similarly installed. As only quarter turn is necessary to open or close valves, they can be easily set, either directly or remotely. Quick setting helps speed change in mode of operation*

Lubricated plug valves *are simple; have but three parts: body, plug and cover. A resilient diaphragm, arrow, exerts pressure against the tapered plug to secure tight seating and prevent leaks. Valves are made by the Rockwell Manufacturing Company, 400 N. Lexington Ave., Pittsburgh 8, Pa.*
7312 on Reader Service Slip.

Operator *adjusting one of three different plug valves. Besides straight-flow valves, one of which may be seen on suction side of pump, Rockwell-Nordstrom lubricated plug valves are made in number of multiport variations: with single L-shaped passage connecting any two ports; with a T-shaped passage for connecting any two of three ports; and the four-way type, which has two passages on opposite sides for connecting any two of four adjacent ports*

DOES YOUR PLANT QUALIFY

Now is the time when public authorities are more concerned than ever with the problems of air and water pollution. Be sure your plant's problems don't result in poor community relations.

The answer: Cloroben — the economical and easily applied chemical emulsion that:

- ELIMINATES the cause of foul odors in lagoons, filters drainage ditches, etc. (Not a masking agent)
- DOES NOT AFFECT digestive bacteria but inhibits odor producing bacteria
- DISSOLVES surface and subsurface grease and slime accumulations
- PREVENTS septicity by stabilizing plant wastes
- CONTROLS many obnoxious stack odors when used as a scrubbing agent

FREE OFFER: A Cloroben "Air-Water Pollution Problem Chart" to help you survey your plant and eliminate trouble — even before it starts. Write today for your copy to Cloroben Chemical Corporation, 115 Jacobus Avenue, South Kearny, New Jersey.

CLOROBEN®

7313 on Reader Service Slip.

Reviews motor, generator fundamentals with . . .

144 answers to electrical questions

Most important theoretical and practical features of common dc and ac motors, generators, and control equipment are simply presented in 48-page Bulletin E 100 P, released by Fairbanks, Morse & Co.

Entitled "Catechism of Electrical Machinery," booklet is composed of 144 questions together with detailed answers that explain much of basic theory involved in electrical applications to motors and generators.

Opening questions in first section, Simple Electric Circuits, establish a basic understanding of what electricity is and how it is produced. Following sections cover instrumentation, dc motors and generators, alternators and ac motors, and electrical machinery in general.

Three charts tabulate motor characteristics, full-load amperes vs motor horsepower, and wire and fuse sizes for motor-branch circuits. Index in back of bulletin is included for direct reference to questions under which each topic is discussed.

7314 on Reader Service Slip.

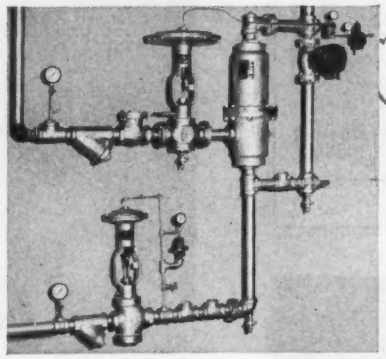
Better maintenance and engineering

Plant Engineering in the Small Plant, Evaluation of Performance, Controlling Costs by Correct Planning and Scheduling, and Getting the Most Out of Industrial Trucks and Batteries are but some of the subjects covered in 37 papers that were presented at this year's Plant Maintenance & Engineering Conference.

Verbatim report of this conference is presented in twelfth volume of "Techniques of Plant Maintenance & Engineering." The most extensive treatment of the subject ever published in this series, the 8½ by 11-in., cloth-bound book contains all 37 papers,

HOT WATER INSTANTLY

Accurate Temperatures . . . Low Cost . . . Any Quantity from 500 to 50,000 Gallons Per Hour!



Pick STEAM INJECTION

WATER HEATERS

for high or low pressure steam

Direct contact of steam and water in the Pick patented mixing chamber produces hot water at the desired temperature, and in the required quantity, *instantly!* There's no time lag . . . no steam wasted to maintain heat in stored water . . . steam used only as hot water is drawn. Water temperature maintained within 3° plus or minus. Volume adjustable from 5% to full rated capacity. Pick heaters require no floor space . . . usually installed on wall. Whatever your hot water needs are, Pick will do it faster, more accurately and at lower cost!

FREE CATALOG — Contains complete information and specifications. Write today to Dept. K.

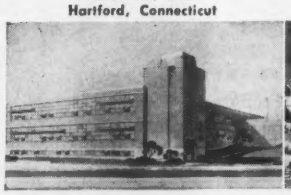
Pick WATER HEATERS

PICK Manufacturing Co.
Water Heater Division
WEST BEND, WISCONSIN

Used by America's Leading Food Processors:

Central Dairy, Inc.
Ft. Wayne, Indiana

Peters Meat Products, Inc.
St. Paul, Minnesota



Heublein, Inc.
Hartford, Connecticut

Gerber Products Co.
Fremont, Michigan

7315 on Reader Service Slip.

illustrated by 114 charts, diagrams and tables.

It also contains 607 questions presented by the audience, and in addition, discussions of 155 subjects covered in eleven "problem sessions."

Book, 349 pp, is available at $10.00 postpaid, from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N.Y.

Ready reference for stainless steels

Description of facilities, services and products of Eastern Stainless Steel Corporation stated to be the world's largest exclusive producer of stainless steel sheets and plates, is presented in 22-page booklet entitled "This is Eastern Stainless."

Literature is designed to be a ready reference; contains chemical-analysis chart that lists 27 different types of stainless steels. It also contains two size-limitation charts for converted plates of 10 types of stainless, and limitation charts for Sendzimir Mill and Hand-Mill plates.

Brief descriptions of each type of stainless steel produced as well as finishes available are included.

7316 on Reader Service Slip.

Eleven types of sight flow indicators

Two page bulletin (LHB FORD) available from OPW-Jordan Corporation shows photos of 11 styles of sight flow indicators, called Visi-Flow Indicator.

Bulletin provides information about materials of construction, dimentional specifications, and performance data.

The various styles of indicators have threaded or flanged ends; vertical or horizontal installation; flow indication by direct vision, impeller indicator, or magnetic actuated gage.

Bodies of the indicators are made of aluminum, bronze, or monel metal in sizes ranging from ½ to 6" in diam.

7317 on Reader Service Slip.

7318 on Reader Service Slip.

GASKETS
for Food
Processing

For tight sealing against high temperature steam and corrosive liquids, specify Garlock gasketing . . . available in either sheet or cut form or special construction.

For all your gasketing needs, choose from a complete line of Garlock materials. Regardless of service conditions, there is a specific Garlock style for the job.

In either sheet form or cut to your specifications, Garlock offers **Style 7021** synthetic binder and long fibre asbestos, superior for hot oil service at 700°F; **Style 7228** high quality neoprene binder and long fibre asbestos, for gasoline, naphtha, benzine and other hazardous liquids and solvents, temperature to 300°F; **Style 7705** synthetic binder with blue African asbestos fibre, excellent against hot and cold mineral acid; **Style 900** long fibre asbestos with synthetic binder, for service against steam, gas, air, temperatures to 700°F; **Style 7772,** long fibre asbestos with synthetic binder, white in color, for service in chemical and petrochemical process equipment where leeching is a problem, temperatures to 700°F. Other gasketing materials available to meet your specific requirements.

In rubber sheet form, Garlock offers Style 7986 Neoprene sheet for flanged joints where oil resistant qualities of neoprene are required; **Style 8495** Buna-N sheet for gasketing against oils and solvents at temperatures up to 300°F; **Style 7992** Neoprene rubber diaphragm sheet for wet natural gas, gasoline, oils at medium or high pressures; **Style 9296** Silicone-Dacron diaphragm sheet for hot or cold air, high aniline point oils and many fire resistant fluids at temperatures to 300°F.

For prompt delivery, complete gasket cutting facilities are available in Palmyra, N. Y., Houston, Texas, and San Francisco, Calif. Get details by contacting the nearest of the 26 Garlock sales offices and warehouses throughout the U. S. and Canada. Or, write Garlock Inc., Palmyra, N. Y.

GARLOCK

Canadian Div.: Garlock of Canada Ltd.
Plastics Div.: United States Gasket Co.

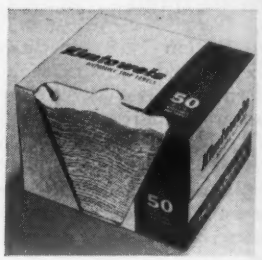
Order from the Garlock 2,000 . . . . two thousand different styles of Packings, Gaskets, Seals, Molded and Extruded Rubber, Plastic Products.

7319 on Reader Service Slip.

Many applications with disposable shop towels

Heavy-duty paper towels are designed to be reusable. In more than two years of laboratory and field testing, throw-away towels have shown that they will hold up through multiple applications.

Paper towels, designated Kimtowels, are a



wood cellulose product. They are lint free, highly absorbent and have high tensile strength.

Costing approximately one cent, the 13-in. by 15-in. towels are packaged with a quarter turn in boxes of 50. Special metal dispensers that can be locked to prevent pilferage are available.

Further information and free sample boxes are available from Kimberly-Clark Corporation, Industrial Products Division, Neenah, Wis.
7320 on Reader Service Slip.

"Our last contract caught us with our pants down . . ."

for pre-cooling and preserving foods

Series "M" King Koolers operate with low velocities in the cooler to maintain temperatures of 34° to 50° F., using ammonia or Freon refrigerants. Centrifugal blowers pull air through the cooling coil for efficient heat transfer. Featuring automatic temperature and refrigerant control, system defrosts during off cycle. Water defrost methods are also available.

King Product Koolers are easily and quickly installed and serviced . . . assuring economy, efficiency, safety. Ceiling suspended and floor types are available in a complete range of sizes from 3,000 to 18,000 C.F.M.

PRODUCT KOOLERS Manufacturers of King sharp freeze, COMPANY OF OWATONNA 911 North Cedar St. • Owatonna Minn. cooling, ventilating and heating systems.

for ventilating, heating, filtering and cooling

Designed for use in dairy food processing and industrial plants, Klimatic King units are fabricated of galvanized steel, insulated to eliminate condensation, have automatic temperature and ventilating controls. Two speed motors insure operating economy. Klimatic King eliminates excessive humidity, objectionable odors, dust and air circulation problems and wide temperature variations. Engineered to meet your requirements, units may be suspended from the ceiling or mounted on the roof; located in remote areas with a duct-work system providing necessary air delivery. Sizes from 3,100 to 20,000 C.F.M.

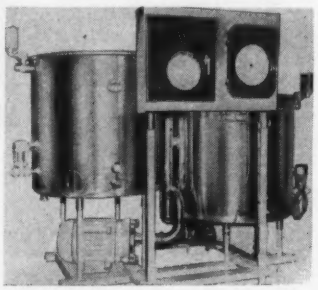
KLIMATIC KING Manufacturers of King sharp freeze, COMPANY OF OWATONNA 911 North Cedar St. • Owatonna Minn. cooling, ventilating and heating systems.

7321 on Reader Service Slip.

Simplified, packaged cleaning system

Automatic cleaning system, Model 5, is a packaged, ready-to-install unit that is easy to operate and can be hooked into any CIP circuit.

It will automatically circulate pre-rinse, detergent and post-rinse solutions, controlling circulating time, solution temperature and solution levels.



Flexi-Timer and recorder panel of automatic cleaning system can be located to suit user

System is described and illustrated in two-page Bulletin No. 853, released by Girton Manufacturing Company. Two-view engineering drawing details all major components of system and major dimensions are tabulated.

7322 on Reader Service Slip.

Teflon-lined hose for up to 300 F liquids

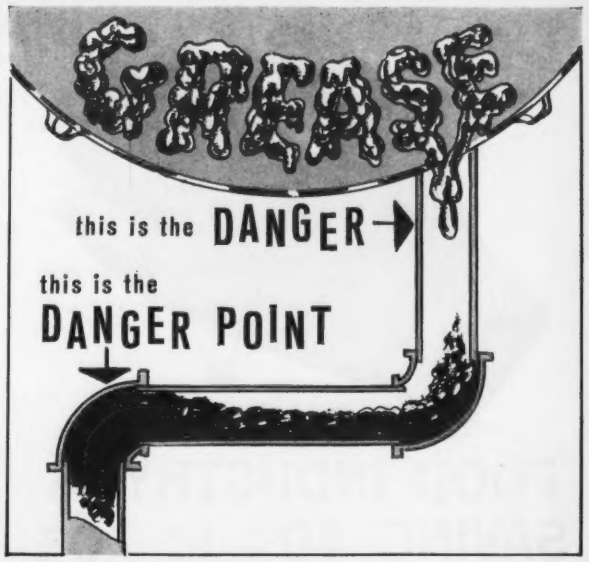
Neoprene rubber tubing that is lined with Teflon is designed for handling liquid foods such as soups, juices, oils, and milk products at temperatures up to 300 F.

Tubing, called Safe-T-Line, will not impart any taste or odor to foods because of its Teflon lining. Neoprene jacket makes tubing tough, yet flexible, and keeps it from collapsing under severe conditions.

Tube sizes range from ¼ to ½ in. inside diam and will handle working pressures up to 125 psi.

Supplier: W. S. Shamban & Co., 11617 W. Jefferson Blvd., Culver City, Calif.

7323 on Reader Service Slip.

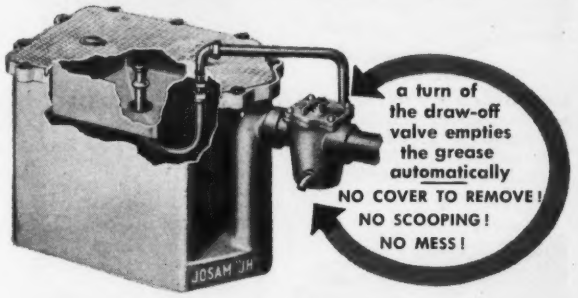


Josam SERIES "JH"

GREASE INTERCEPTORS

intercept the grease . . . keep pipe lines clean

THE ONLY INTERCEPTOR THAT DISCHARGES THE COLLECTED GREASE AT THE TURN OF A VALVE!



• Greasy wastes, when poured down the drain, build up layer upon layer until the entire waste line is clogged up. Why wait until the resulting trouble, expense and inconvenience happen to you, when it's so easy to prevent? With the Josam Series "JH" Interceptor you not only reclaim over 95% of the grease in waste water but, at the "turn of a valve" you automatically draw off the grease into convenient containers.

No other interceptor provides these features and the cost is so little compared with the inconvenience and expense prevented! Get complete details by writing for Manual "JH" today.

JOSAM MANUFACTURING CO.
General Offices and Manufacturing Division • Michigan City, Ind.
REPRESENTATIVES IN ALL PRINCIPAL CITIES
West Coast Distributors
JOSAM PACIFIC CO.
765 Folsom Street San Francisco 7, Calif.
JOSAM PRODUCTS ARE SOLD THROUGH PLUMBING SUPPLY WHOLESALERS
Manufacturers and Representative in Mexico — HELVEX, S.A., Mexico City

7324 on Reader Service Slip.

FOOD INDUSTRY IS SAVING 40% to 70%

In cost-minded companies, older types of work gloves have been widely replaced with Edmont coated gloves *designed to fit the job application.* Often a job-fitted glove that costs less will wear several times longer and give better hand protection and dexterity. Savings of 40% to 70% are typical. We will gladly cooperate on a testing program to determine your maximum saving.

SNORKEL

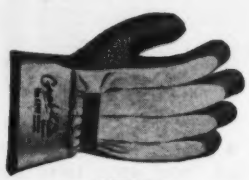
SUPER-FLEXIBLE VINYL plastic with good solvent resistance and non-slip wet grip. 2-piece jersey liner and seamless palm give extra dexterity and comfort. 6 styles.

MONKEY GRIP

TOUGH VINYL PLASTIC for superior abrasion resistance. 2-piece easy-flex liner increases flexibility. 10 styles.

NEOX

REINFORCED NEOPRENE gives best all purpose protection against solvents, snagging, abrasion and heat. 8 styles.



GRAB-IT

ROUGH FINISH natural rubber coating gives positive non-slip grip, wet or dry, resists cutting and abrasion. 8 styles.

FREE TEST OFFER TO D&B LISTED FIRMS: Clip this form to your letterhead. We will send correct gloves for on-the-job test. Edmont Inc., 1212 Walnut St., Coshocton, Ohio. In Canada, Edmont Canada Ltd., Cowansville, Quebec.

Operation_____

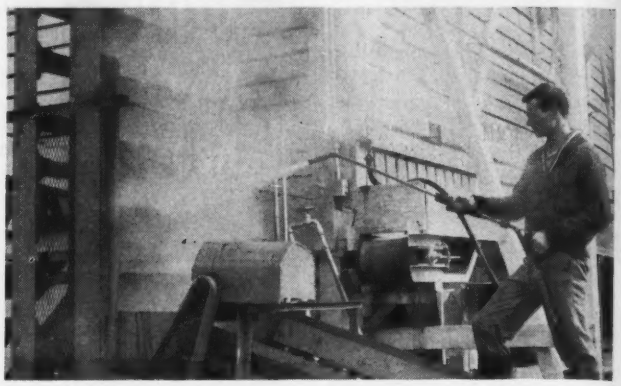
_____

Oil, Solvent or Chemical_____

Temperature Extreme_____ Problem: ( ) Cost Saving ( ) Safety ( ) Dexterity ( ) Employee Satisfaction

Edmont JOB-FITTED GLOVES

7325 on Reader Service Slip.



Steam cleaner connections are also located near fruit receiving conveyors outside plant

Cuts detergent costs in half, promotes cleaner plant

E. A. Silzle Corp. installs central cleaning unit (uses plant steam) with 15 stations for faster, efficient cleaning

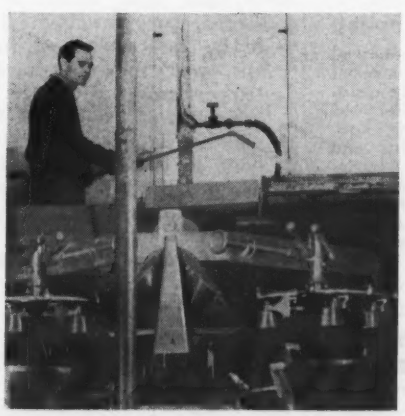
WILLIAM (Bill) SILZLE, Vice President, Production
ROBERT V. CLARK, General Manager
GEORGE MINER, Plant Superintendent
KARL ROBE, Associate Editor

PROBLEM: E. A. Silzle Corp., Anaheim, Calif., citrus processors, used manual methods for plant cleaning, with steam hoses, brushes and buckets of hot detergent solution.

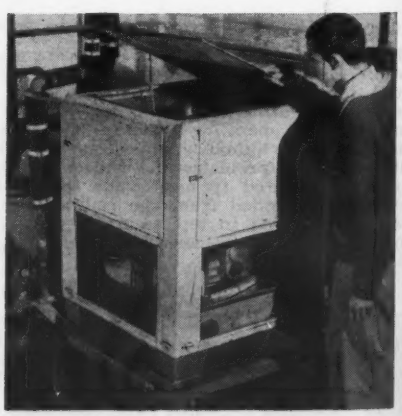
These methods required considerable manpower and resulted in frequent need for overtime crews. Not only expensive, cleaning procedures also added to fatigue factor of crews during peak processing season when shifts are normally long anyway.

Solution: In a small 4-ft by 4-ft portion of a storage area under a stairway, Silzle Corp. installed a central cleaning unit and ran pipes to 15 permanent stations throughout plant.

Unit, a "fireless steam cleaner," uses plant steam and water. A reservoir contains concentrated detergent solution,



To clean in tight spots among processing equipment, operator merely couples 25-ft hose to nearby steam-detergent faucet



Compact 30 by 30-in. central unit uses plant steam, automatically mixes pre-set amount of steam, water and detergent

made by periodic additions of granular detergent. Float control and proportioning system automatically feeds pre-set concentration into make-up tank.

A positive-action piston pump forces cleaning solution through steam mixing valve into remote lines.

Cleaner has output of 300 gph, uses 20 boiler HP (690 lb steam/hr at 80 to 120 psig), plus 260 gph cold water at 60 psig.

Heavy duty steam cleaning gun is used with 25-ft hose which is coupled to any convenient cleaning station in plant. Gun has 360° swivel coupling for easy use in any position.

Granular detergent solution is highly alkaline (pH 12.2), contains sequestering agents to combat water hardness, and saponifying agents to displace and emulsify oils and grease.

Optional equipment includes control at nozzle for plugging hose into any cleaning-station coupling and turning on central cleaner from remote location.

Results: Plant records show that in the year previous to installation of central steam cleaner, 15 drums of detergent were purchased. In following year, only 7 drums were used.

Saving in detergent costs was accompanied by saving in labor and in improved sanitation. One man can now clean successive pieces of equipment as they shut down, from receiving through processing and filling. He can handle bulk of such clean-up chores while processing crew is still busy.

Automatically proportioned cleaning solution assures maximum cleaning efficiency throughout cleaning period. This, coupled with ease of getting at hard-to-reach places with full-swivel nozzle, promotes more dependable sanitation techniques and cleaner plant.

Kelite Fireless 61 steam cleaner and Kelite No. 27-A detergent are products of Kelite Corp., 1250 North Main St., Los Angeles 12, Calif.

7326 on Reader Service Slip.

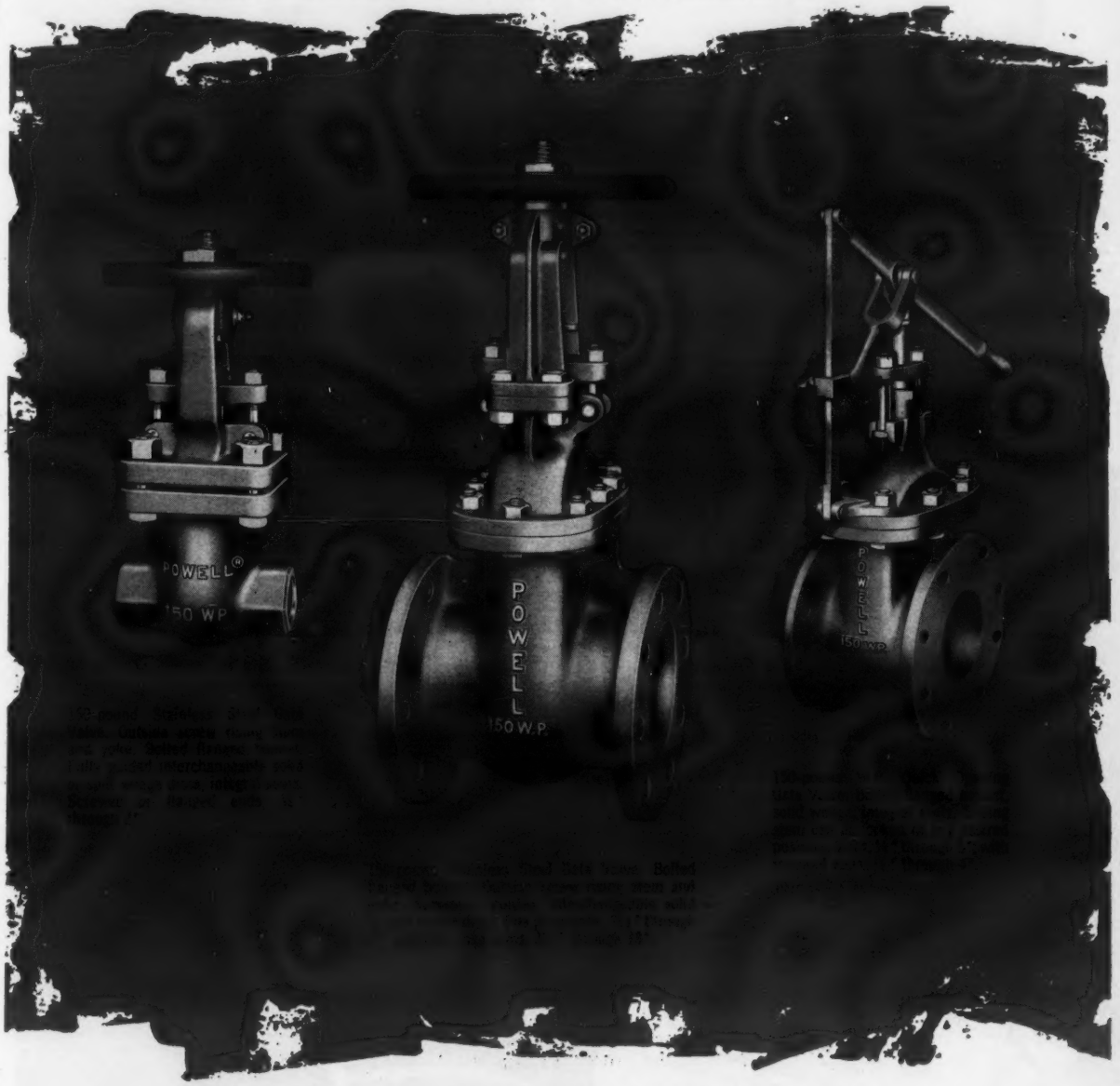
POWELL PERFORMANCE PAYS OFF

Powell valve performance really pays off for the chemical industry. Take "reliability" for instance.

Powell reliability starts with good design features specifically tailored for chemical installations. For example, there is a deep stuffing box for an extra amount of special packing. And valve bodies are designed with full flow areas for maximum flow conditions and minimized pressure drop. Also, wedge discs are precision machined and fully guided to eliminate drag and wear of the seating surface as well as undue vibration.

You get thorough valve engineering like this—plus, industry's widest selection of valve materials, both ferrous and non-ferrous, so that Powell valves can withstand virtually any problem of corrosion, erosion, temperature or pressure. Whatever your valve requirements—look to Powell.

All this adds up to reliability that gives a performance pay off to you. Get the full story from your nearby Powell Valve distributor, or write The Wm. Powell Company, Cincinnati 22, Ohio.



115th year of manufacturing industrial valves for the free world

POWELL CORROSION-RESISTANT **VALVES**

THE WM. POWELL COMPANY CINCINNATI 22, OHIO

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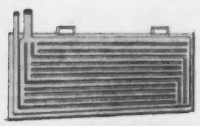
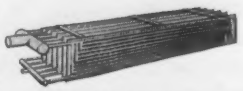
PLATECOIL®



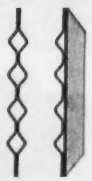
Standard PLATECOIL units



FACTORY-ASSEMBLED PLATECOIL banks

In factory-fabricated styles to fit your needs

ROLLED to specified diameters



SINGLE EMBOSSED OR DOUBLE EMBOSSED

The PLATECOIL units above are just a few of the many standard and special units that are effecting savings and better performance in a wide range of tank and process heating and cooling applications. If you are looking for faster heat up, more heat transfer in less space, savings on installation or maintenance or an answer to other heat transfer problems, it will pay you to investigate PLATECOIL.

"PLATECOIL" can be furnished to comply with ASME Code.

Send for free BULLETIN P53 for more information.

PLATECOIL® DIVISION

TRANTER MANUFACTURING, Inc.
LANSING 9, MICHIGAN

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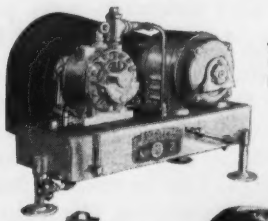
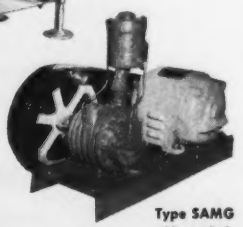
VACUUM

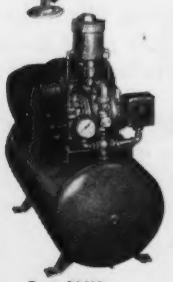
THE RIGHT PUMP
THE RIGHT PRICE



Type SWMH Water cooled high-duty oiling.



Type SAMG Air cooled, high-duty oiling.



Type SAML Air cooled, high-duty oiling.

Write for bulletin giving full specifications.

Dependable, automatic service year in—year out is standard Lammert service. Capacities 4.3 to 225 cfm. Medium to high vacuum (up to 20 microns of barometer).

LAMMERT & MANN CO., INC.
1753 Walnut Street, Chicago 12, Illinois, SEeley 3-0383

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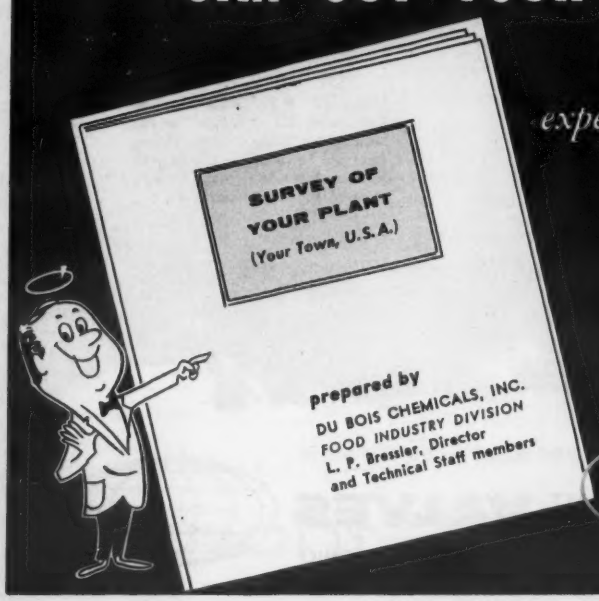
A DuBois Chemicals FOOD PLANT SURVEY CAN CUT YOUR CLEANING COSTS

Write today . . . Learn the facts!
expert appraisal without obligation



It costs you nothing to learn the true efficiency level of your present maintenance and sanitary programs. A DuBois on-the-spot survey may provide the answers to: 1—Automation and how it fits your picture; 2—More efficient use of labor; 3—How to achieve improved levels of cleanliness; 4—Overall cost reduction. Learn the facts first hand, then evaluate them for yourself. Write today on your letterhead.

DuBois Chemicals

DuBois Chemicals, Inc.
Cincinnati 2, Ohio

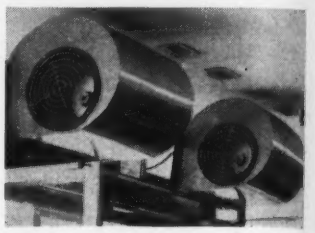
7330 on Reader Service Slip.

sanitation

Invisible barrier

- ***cuts refrigeration loss***
- ***stops insect entry***

Air curtains, maintained by one or two self-contained blowers establishes a thin wall of air across doorways. Moving from top to bottom, they prevent cross currents through



Self-contained blowers are operated by ¼-hp, 110-v electric motors, turning at 1750 rpm

doorway, thus keeping cool or cold air inside.

As a result of air turbulence created, curtain will also prevent passage of flies and similar insects through doorway.

Conditionaire, as the air-curtain blower is designated, can be easily installed by mounting on wall just over doorway.

Supplier: Curtainaire International, 616 East Glenoaks Blvd., Glendale 5, Calif.

7331 on Reader Service Slip.

Plastic pipe for 100 psi at 250 F temperature

Reinforced plastic pressure pipe, called Duracor, will withstand pressures up to 100 psi at temperatures as high as 250 F.

Because of its strength and resistance to corrosion, it may be installed either above or below ground. Underground installations are usually placed on a cement cradle, buried in cement or covered with tamped sand backfill.

Standard pipes are available in 10 and 20 foot length with fibreglass mat and cloth construction. Wall thicknesses range from ¼ to 5/8 inch, depending on the pressure and temperature requirements.

In addition to standard

pipe, a variety of matching fittings are available. A special joining kit provides all of the necessary materials for field installation.

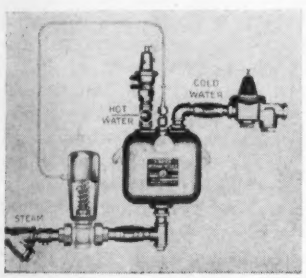
Supplier: The Ceilcote Co., 5036 Ridge Road, Cleveland 9, Ohio.

7332 on Reader Service Slip.

Automatic steam-mixer water heater

Automatic steam-mixer water heater has been improved to provide several advantages. The heater has noiseless double-sleeve bronze diffuser, packless relief valve, silent poppet check valves, ASME automatic temperature- pressures relief valve, and combination water pressure regulator and strainer.

Units available produce single or multiple water temperatures and capacities ranging from 10 to 100 gpm at 50 to 125 psi steam.



Steam-mixer water heaters will supply single or multiple water temperatures

Supplier: O'Brien Steam Specialty Co., Inc., P.O. Box 217, Eastwood Station, Syracuse 6, N.Y.

7333 on Reader Service Slip.

"I want a volunteer with a sensitive nose to identify these spoiled tomato samples . . ."

THREE BILLION DOLLAR VOTE OF CONFIDENCE

in the future of OHIO

To keep pace with Ohio's dynamic growth, the state's eight investor-owned electric power companies will spend three billion dollars in the coming decade to double capacity. As much new generating capacity will be provided in the next ten years as was built in the past seventy-five.

If you are seeking a plant site, these facts are important for two reasons. First, this is solid indication of the confidence electric utilities have in Ohio's future growth. Second, you can be sure there will be plentiful, dependable electric power for your industry. Today, Ohio's generating capacity is 10.6 million kilowatts, and this state is the number one user of electric power in the nation.

Additional information detailing vital plant site factors is yours for the asking. Send the coupon below on your letterhead for two new booklets of solid facts: Statistical Abstract of Ohio: 1960 and Ohio, The Growth State.

Koder M. Collison, Director
State of Ohio, Department of Industrial and Economic Development
700 Bryden Road Columbus 15, Ohio

Please Send:
☐ Statistical Abstract of Ohio: 1960
☐ Ohio, The Growth State brochure

NAME TITLE

BUSINESS ADDRESS

CITY ZONE STATE

7334 on Reader Service Slip.

Hunt Foods' new rail car for inter-plant shipment of unitized loads introduces . . .

ERNEST EMMRICH,
Traffic Manager
Hunt Foods and Industries, Inc.
KARL ROBE,
Associate Editor

▲ **Center bulkhead,** *which runs entire length of car (partially shown at center, right), is high enough to "backstop" full-height unit-loads of cartons on pallets, or, as above, without pallets if pull-type fork attachment is used*

***Each side** has two compartments holding total of 24 pallet-loads (two to four more than regular carload from Hunt)* ▼

Side loading, unloading along entire car length for fast turnaround

IN THE LOADING YARDS of Hunt Foods and Industries, Inc., Fullerton, Calif., in May, a rail car was loaded with cased goods by fork truck in 23 min.

A few days later, at Hunt Foods, Hayward, Calif., the same car was unloaded in 23 min by fork truck.

This is dramatically under the several hr required to load or unload a standard car by conventional methods. Reason is the car's unique design.

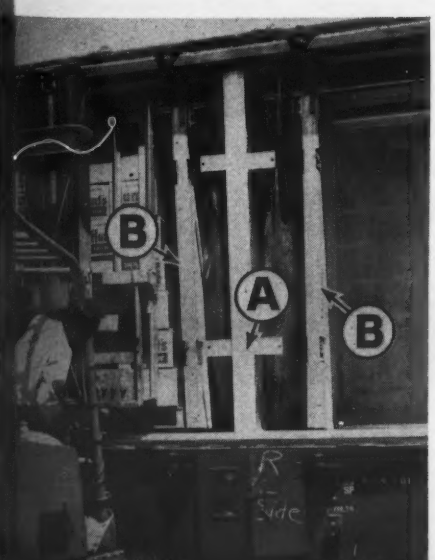
This Southern Pacific car loads from both sides, and accommodates six palletloads of cased goods in each of four compartments.

Dunnage takes only a few minutes to secure or unlock. At each end of each compartment hangs a collapsible rubber bag, hung from ceiling rails. When inflated, the bag applies pressure against a fixed bulkhead on one side, and a movable bulkhead on the side toward the cargo.

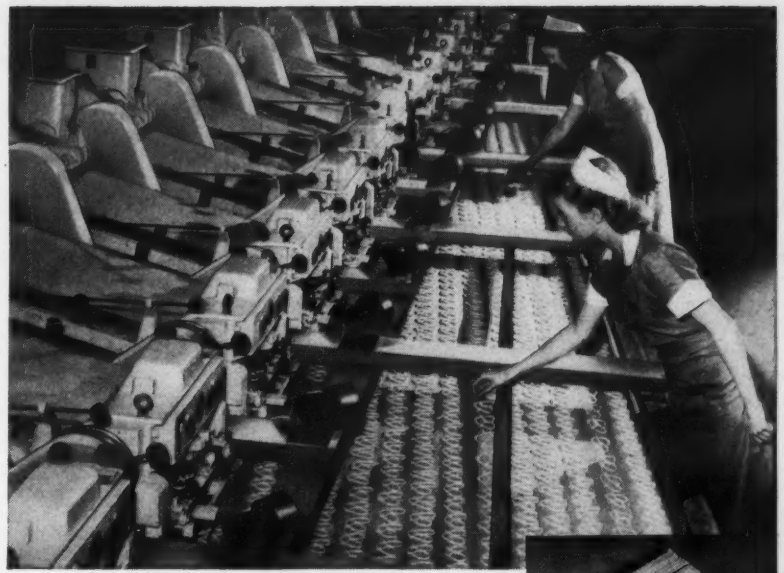
The permanent inflatable dunnage locks each compartment load of six pallets together in the time it takes to inflate the bags. When car travels empty, movable bulkheads are secured by locking pins through the vertical cross bars on the stationary bulkhead shown in the close-up picture.

Floor of the car slants inward slightly to gain load stability, much like the inward slanting racks on a soft drink truck.

Advantages of Hunt car: Hunt Foods is using this car for inter-plant shipment now to test its capabilities. Load-



***At center** of car and at each end, dunnage bags hung from overhead rails, when inflated, push mobile bulkheads (B) away from immobile bulkhead (A) and toward load*



Only **Victor** Offers Food Processors These 3 Styles of Solid Woven Belting

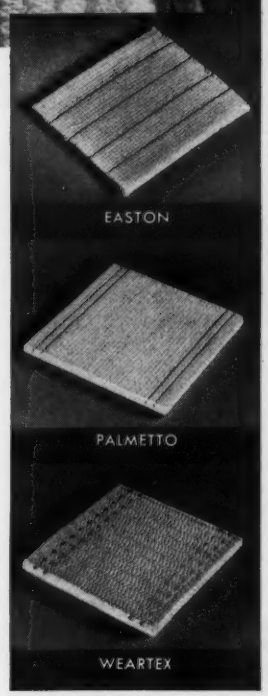
Conveying? Elevating? Special Applications? Wherever the job calls for solid woven belting, you can specify the right kind—every time—if it's Victor. And there are *3* styles to choose from:

EASTON... for general purpose light conveying. Woven of the finest long staple virgin cotton with an exclusive Innerbound construction that effectively prevents ply separation.

PALMETTO...its smooth surface won't mar or mark soft confections or baked goods. Innerbound... with extra threads in the warp and filling that eliminates buckling.

WEARTEX...stronger than conventional solid woven belting because it's Interwoven under extreme tension, rugged heavy-duty Weartex never fluffs or peels as it wears down gradually and evenly.

Only Victor offers you three styles of solid woven belting to choose from... in a wide range of widths, plies, thickness and protective finishes. Write today for circulars containing complete specifications and prices of Victor's famous brands of Solid Woven Belting for the food industry. 1499



A COMPLETE LINE, including: Neoprene Belting • Solid Woven Belting—untreated, impregnated, coated—many widths and plies • Canvas Stitched Belting • Hycar Belting • Belting Specialties.

Victor
Balata & Textile Belting Co.
53 Park Place, New York 7 • 300-306 W. Hubbard Street, Chicago 10
Factory: Easton, Pa.

7335 on Reader Service Slip.

ing and unloading time reduction has been completely satisfactory.

No appreciable damage has resulted to cased goods. Payload is higher. First shipment carried 107,520 lb, vs. average 80,000 to 100,000 lb shipments for pallet shipments in regular movable compartment car.

Hunt uses pallets in this captive shipment trial, although car could be adapted to handle unit loads without pallets by using pull-push type fork attachment, and the loads unitized on corrugated paper base.

Shor-Kwik inflatable rubber dunnage bags are products of U.S. Rubber Co., P.O. Box 1453, Providence 1, R.I.
7336 on Reader Service Slip.

Since car has four independent compartments it could be used to drop-ship in quarter-car increments to points along route.

Disadvantages: Hunt loads, unloads from street level, so has access to all sides of car. If car were spotted along dock having spaced door openings, car would have to be moved to expose new loads to dock openings. Center bulkhead would preclude unloading car from only one side, so it is not adaptable in present form to ordinary dock loading.

On the other hand, if warehouse is accessible to convenient trackage which could be paved on both sides of car for street-level operation of fork trucks, system would be easily usable in same way Hunt's uses it. **END**

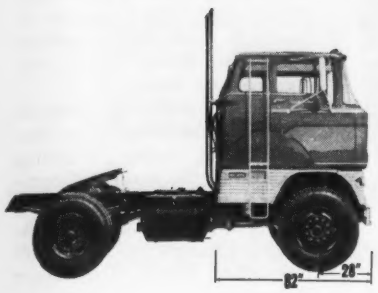
"Becker, your truck's being overhauled . . . so . . ."

THE NEWEST REASON TO MAKE YOUR NEXT TRACTOR A FORD:

ALL-NEW FORD H-SERIES GAS OR DIESEL

FORD DIVISION, Ford Motor Company.

Ford H-Series tractors offer a choice of five Super Duty V-8's or four proven Cummins Diesels for maximum performance, economy and durability! Over 500 engine-transmission-axle combinations provide "job-fitting" economy on any run.



New Ford H-Series tractors have a short 28-in. BA for hauling maximum legal loads in most "bridge formula" states. And their compact 82-in. BBC dimension accommodates longer high-cube trailers. For greater payloads within their 76,800-lb. maximum GCW range, strong lightweight components are used wherever consistent with maximum durability. Extra-hi-tensile steel frames, fiberglass cab skirts, aluminum steering gear housing, and optional aluminum disc wheels, transmission cases and fuel tanks are typical examples of Ford's weight-saving design.

Ford H-Series models are quality-built to the most exacting standards in the industry. They're the only tractors with gas engines so dependable they're dealer-warranted for 100,000 miles. And maintenance-engineered design means fewer downtime delays . . . lower maintenance costs.

SEVEN MORE REASONS

WHY IT'S GOOD BUSINESS TO DO BUSINESS WITH FORD!

You save from the start with Ford's traditionally low prices, and your savings continue with low operating and maintenance costs. These facts are documented by certified test reports from America's foremost independent automotive research firm. Ask to see these reports. They're on file at your Ford Dealer's.

In addition to these dollar-and-cents savings, the following bonus benefits are yours with Ford Trucks:

1. Rigid quality controls give you the strongest safeguard of truck reliability ever. Modern, *exclusive-truck* manufacturing facilities, with emphasis on quality every step of the way, are designed to give you a Ford Truck that is as free from defects as a truck can be. Tangible results of these high standards are Ford's new warranties.

2. Exclusive 100,000-mile warranty (or 24 months) on 401-, 477- and 534-cu. in. Super Duty V-8's is the most liberal in the industry. Each major engine part (including block, heads, crankshaft, valves, pistons, rings), when engine is used in normal service, is warranted by your dealer against defects in material or workmanship for 100,000 miles or 24 months, whichever comes first. The warranty covers full cost of replacement parts . . . full labor costs for first year or 50,000 miles, sliding percentage scale thereafter.

3. 12,000-mile warranty (or 12 months) on all 1961 Ford Trucks of every size is further evidence of the confidence Ford has in its quality controls. Each part, except tires and tubes, is now warranted by your dealer against defects in material or workmanship for 12 months or 12,000 miles, whichever comes first. The warranty does not apply, of course, to normal maintenance service or to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points.

4. Special fleet financing can be arranged by your Ford Dealer. It's available for owners of two or more trucks, and provides the opportunity to precisely tailor payments to your income patterns or depreciation schedules. This fleet-fitted financing offers substantial savings and frees your working capital.

5. Sales engineers and service specialists in 36 district offices are on call to solve special truck problems. Working with both dealers and customers, these experienced truck men represent another extra step Ford takes to provide your continued satisfaction.

6. Replacement parts depots at 26 strategic locations across the country quickly supply needed parts from ample stocks. Ford's entire supply system is geared to give you faster service and reduce costly downtime . . . *wherever* you are.

7. 6,800 Ford Dealers, including 280 specialized Heavy Duty truck dealers, can keep your trucks ready to go wherever they go. From coast to coast, fast Ford service—gas *and* Diesel—is always close at hand.

From Super Economy pickups to Diesel-powered tractors, you can now fill every truck need up to 76,800 pounds GCW with a modern, money-saving Ford Truck.

QUALITY-BUILT...MAINTENANCE-ENGINEERED

FORD TRUCKS COST LESS

7337 on Reader Service Slip.

Get the most from your handling dollar! New book serves as management's

Handling productivity yardstick

Material handling accounts for 20-30 per cent of a product's cost — yet contributes nothing to intrinsic product value.

Though obviously a fertile field for potential cost reduction, until now management has been handicapped in searching out and segregating these costs due to lack of a uniform working method for determining efficiency of current material handling systems.

Such a "tool," in the form of a 36-page soft-cover book, has been developed by Yale Materials Handling Division of The Yale & Towne Manufacturing Company, in cooperation with Prof. James R. Bright of Harvard University Graduate School of Business Administration.

Entitled "Management Guide to Productivity," the book organizes cumulative handling experience into a simple "package" that can be applied by management executives easily and effectively to their own plant and warehouse situations.

This book does not give the answers. It helps the executive establish the questions he must ask about his operations in order to define certain major costs, determine their cause and establish a program for improved productivity and profits.

Each of the seven basic efficiency-cost ratios, that touch virtually every handling phase, is accompanied by a formula permitting the user to calculate his plant's performance in an area of material handling operation.

Average and minimum acceptable standards are set for each ratio measure. Work sheets allow for calculations where necessary.

In addition, a simplified

LINK-BELT S-815 flat-top chain with

Dovetail Design

assures smooth pickup, smooth ride for containers

Here's a simple, durable, moderately priced flat-top chain specially designed to treat containers gently.

One-piece steel links dovetail to form a level, continuous carrying surface. This design, together with beveled edges, assures smooth pickups and transfers . . . reduces danger of tipping stalled or slow-moving containers.

Dovetail design also assures long life for Link-Belt S-815 flat-top chain. Pulling load is absorbed by entire link during chain-sprocket contact. Results: wide load distribution, low unit bearing pressure on sprocket teeth, no load on pin during articulation.

For complete details on S-815 and all other Link-Belt flat-top chains, contact your nearest Link-Belt office or authorized stock-carrying distributor. See CHAINS in the yellow pages. Or write for Catalog 1050.

LINK-BELT

CHAINS & SPROCKETS

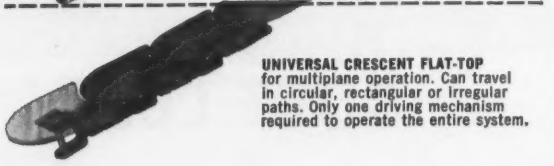
LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses, District Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 15,416

OTHER LINK-BELT FLAT-TOP CHAINS

FT-1560 FLAT-TOP for straightline service. Furnished entirely of carbon or stainless steel, or with stainless steel top plates riveted to carbon steel chain.

DS-1560 FLAT-TOP for straightline service. Consists of smooth, resilient, lightweight delrin top plates joined to carbon or stainless steel roller chain.

CRESCENT FLAT-TOP designed for smooth travel over numerous horizontal paths. Ideal for use where material must be carried around corners or recirculated.



UNIVERSAL CRESCENT FLAT-TOP for multiplane operation. Can travel in circular, rectangular or irregular paths. Only one driving mechanism required to operate the entire system.

7338 on Reader Service Slip.

check list permits a quick survey of operations in a plant, to highlight immediately hitherto unexposed areas where savings can be made.

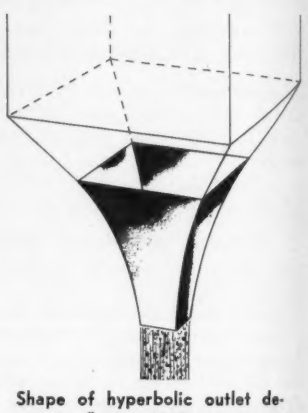
Specific subjects include: Materials Handling Labor Ratio; Direct Labor Handling Loss Ratio; Movement/Operation Ratio; Manufacturing Cycle Efficiency; Space Utilization Efficiency; Equipment Utilization Ratio; Aisle Space Potential.

7339 on Reader Service Slip.

Fast, free flow from storage

New outlets with hyperbolically curved sides provide full, uniform flow of granular and/or lump bulk materials from bins, hoppers or silos; eliminate bridging, rat-holing and erratic flow.

Hyperbolic Outlets, as they are named, are designed to reduce restrictions to flow and increase the force that causes flow through outlet, see photo caption.



Shape of hyperbolic outlet decreases flow-restriction pressures and increases discharge pressure

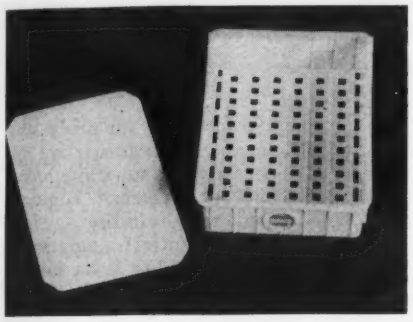
Outlets, which replace lower section of conventional bin or hopper and become an integral part of storage unit, are presented in four-page folder, available from The Bin-Dicator Company.

Literature, Bin-Dicator Hyperbolic Outlet also contains specifications and table of dimensions for standard units.

7340 on Reader Service Slip.

Sweet-handling new tray for candy chocolates and other confections . . .

• Cuts costs
• Ends contamination
• Speeds production



Open-grid bottom design permits free air circulation when loaded trays are stacked; round port molded in front end holds identification card

W. F. SCHRAFFT & Sons Corp., Charlestown, Mass., is replacing 100,000 wood stock trays and approximately 500,000 conventional cardboard layer cards with plastic Sani-Trays and Sani-Cards.

Molded in one piece of W. R. Grace & Company's "Grex" high-density polyethylene, the plastic trays weigh half as much as a wood tray, thus reducing worker fatigue and speeding production.

The non-porous, smooth plastic surface cannot absorb dust or odors, and the trays' cove-molded corners prevent dirt accumulation. The stickiest residue is flushed off easily in ordinary washing.

Repeated cleanings will not affect the trays, nor will hot-water sterilization, should this be required. The tray is shock-resistant, non-deforming and virtually unbreakable.

Supplier: W. R. H. Products Co., Rumford, R.I.

7341 on Reader Service Slip.

Schrafft production line that has been converted to new Sani-Trays is "backstopped" by stacks of empty trays. New trays can be stacked to any required height without tipping

Buffalo CONVEYOR BELTS

offer you TRIPLE ADVANTAGES at LESS COST!

Don't look ridiculous by paying *full price* for HALF VALUE in conveyor belts! BW & B's exclusive WOV-IN-WEAR process weaves these belts TIGHTER from TOUGHER yarn to assure LONGER "fray-free" LIFE; they have a "built-in bounce" that ABSORBS IMPACT and ABRASION. Nothing normally conveyed will Dig, Dent or Destroy Buffalo Belts . . . except Old Age. In addition, these belts are very PLIABLE and won't fight the rough spots or misalignments in your line. Buffalo Belts merely MOLD themselves AROUND and OVER obstructions and keep on serving . . . without abrasion wear. This is NOT true of stiff, hard, plied up, *more costly* belts.

Don't settle for LESS . . . get the prices and pluses of BUFFALO. 200 sizes, 35 widths, 7 thicknesses.

6 SPECIAL SURFACES

Belts specially treated to resist weather, water, acid, oil, grease, alkalies, high or low temperatures, extremely rough material or to handle pure food.

WRITE FOR 14 PAGE MANUAL

Prices, pictures and practical suggestions on what belt to choose from our complete line.

BUFFALO WEAVING & BELTING CO., INC.

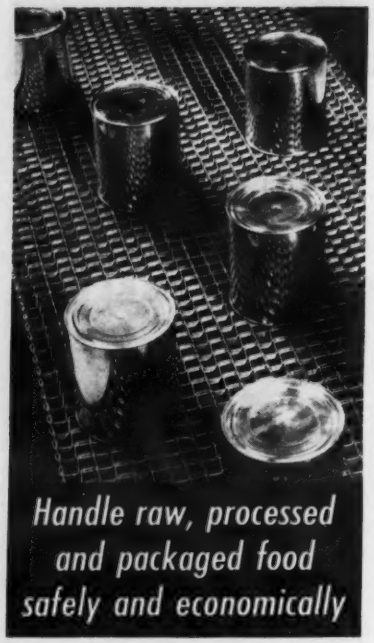
204 CHANDLER ST. • BUFFALO 7, N. Y.

We also manufacture a complete line of WEBBINGS and PURE SHEET RUBBER

7342 on Reader Service Slip.

LA PORTE

FLEXIBLE STEEL CONVEYOR BELTS



THE flexible open-mesh design of LaPorte Belts offers definite money-saving advantages to food manufacturers. For example, fruits and vegetables cannot roll off. Sorting, grading, washing, canning, dehydrating and freezing are speeded up. The impenetrable surface, that resists oils, grease and detergents, safeguards products against off-flavors and odors. In addition, these temperature-proof belts maintain a perfectly flat surface on filling and sealing tables. Easily sterilized with a steam gun while in motion.

If you process, package, store or ship food, it will pay you to use LaPorte Belts. Available in ½" x 1", or 1" x 1" in any length and practically any width. Ask your mill supplier or mail coupon for illustrated literature and prices.

MAIL COUPON TODAY

LA PORTE MAT & MFG. CO.
Box 124 Dept. A
La Porte, Indiana

Please send free literature on your Conveyor Belt.

NAME_____

ADDRESS_____

CITY_____ STATE_____

7343 on Reader Service Slip.

Frozen Eskimo Pie blocks, right, are coated with hot chocolate, center, then move onto Silicone-rubber conveyor belt, left, which carries them to re-cooling tunnel

Photo courtesy Dow Corning Corp.

Solves sticky conveying problem!

Silicone-rubber conveyor belt smooths 'Eskimo Pie' production

PROBLEM: McDonald Ice Cream Co., Saginaw, Mich., uses belts to convey its popular Eskimo Pies through the various processing steps. A problem was encountered at the point where the formed ice-cream blocks, freshly coated with hot chocolate, were conveyed to a re-cooling tunnel.

With the conventional rubber belts used, chocolate adhered to belt surface, requiring periodic use of water to clean them off.

Moreover, there was an added problem of belt failure under the service requirements of heat and cold.

Solution-Results: A specially designed stick-proof belt, fabricated of Silicone rubber, has eliminated previously encountered sticking, reduced clean-up requirements.

As added bonus, McDonald estimates that the new belt has brought about a 15 per cent saving in chocolate.

Supplier: Stick-proof Silicone-rubber conveyor belt by Hewitt-Robins, Stamford, Connecticut.

7344 on Reader Service Slip.

"Cut-rate piggyback legitimate" — I.C.C.

Two important forms of piggyback-freight service that offer marked rate advantages to shippers have been officially approved by the Interstate Commerce Commission.

Although in use since 1958, pending review by the Commission, the plans had been attacked by elements in the trucking industry as unlawful

Would you like to receive FOOD PROCESSING personally?

It will be sent to you without charge or obligation . . .

. . . if you qualify

. . . if you request it

If you are responsible for processing operations in an administrative capacity as plant superintendent, food technologist, chemist, engineer or equivalent responsibility . . . in a plant of substantial operations* where food processing is an important factor . . . FOOD PROCESSING will be sent to you without charge or obligation if you request it. Use form below. In requesting, be sure to answer all questions. If your firm is not rated or listed in standard references, indicate size of the company by capacity, annual sales or number of employees. Unless all information is given, magazine will not be sent.

*"Substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

FOOD PROCESSING
111 EAST DELAWARE PLACE
CHICAGO 11, ILLINOIS

Please send me FOOD PROCESSING without charge or obligation

Name_____

Title_____

Company_____

Rating of Company_____

Street_____

City_____ Zone_____

State_____

Main Products_____

Association News

Florasynth Laboratories, Inc.

New York, presented its annual IFT Fellowship Award, consisting of $1000 and a plaque, to Steven R. Tannenbaum, Massachusetts Institute of Technology graduate student. Tannenbaum, who is securing his doctorate in MIT's Department of Food Technology, is including in his advanced training the study of chemistry as related to foods and flavors. Next Florasynth Award recipient will be Kenneth W. Lebermann, graduate student in the Department of Food Technology, University of Illinois.

American Dry Milk Institute, Inc.

Chicago, has elected as chairman H. S. Wagner of Pet Milk Co., St. Louis. M. L. Totten, Land O'-Lakes Creameries, Inc., Minneapolis, was named vice chairman.

Eastern Meat Packers Assn., Inc.

Washington, D.C., has elected as president for the 1961-62 membership year John G. McKenzie of John McKenzie Packing Co.

Canadian Institute of Food Technology

has as new president William R. Mason, research manager for General Foods, Ltd., Toronto. President-elect is E.A.M. Asselbergs, food technologist, Dept. of Agriculture, Ottawa. As part of its program to find ways to aid the world's hungry, the Institute's national council announced plans to eventually establish a training center for food technologists in the Far East.

For more information on product at right, circle 7345 see information request blank opposite last page.

Hertz Customer—Snow-Kist Frozen Food Corp., Jersey City, N. J.

HERTZ gets you out of the Truck Business . . . and back into the Grocery Business!

Every hour spent on truck problems and administrative details is an hour *better* spent in promoting your own business. This is why more and more companies today are switching to Hertz Truck Lease Service!

Hertz pays cash for your present trucks. Then you take your choice of new GMC, Chevrolet or other sturdy trucks. Or your own trucks can be reconditioned and leased back to you. Instead of many separate bills, you pay just one check per week—and that covers everything except the driver.

Hertz Truck Lease Service includes complete maintenance, gas, oil, garaging, emergency road service, painting and lettering of trucks plus all administrative details such as licensing, insurance—and much more!

The service is *flexible*—trucks are custom-engineered, for example, to suit any kind of business. Should a truck be tied up for repairs, Hertz provides a replacement. Or if extra trucks are needed for peak periods, Hertz supplies them immediately. Get out of the truck business today! Call your local Hertz Truck Lease office for more information or write for booklet—"How to Get Out of the Truck Business."

No investment . . . no upkeep

LEASE HERTZ TRUCKS

HERTZ ALSO RENTS TRUCKS BY THE HOUR, DAY OR WEEK

HERTZ TRUCK LEASE, Dept. N-8
660 Madison Avenue, New York 21, N.Y.
Please send copy of booklet—"How to Get Out of the Truck Business" to:

NAME_____

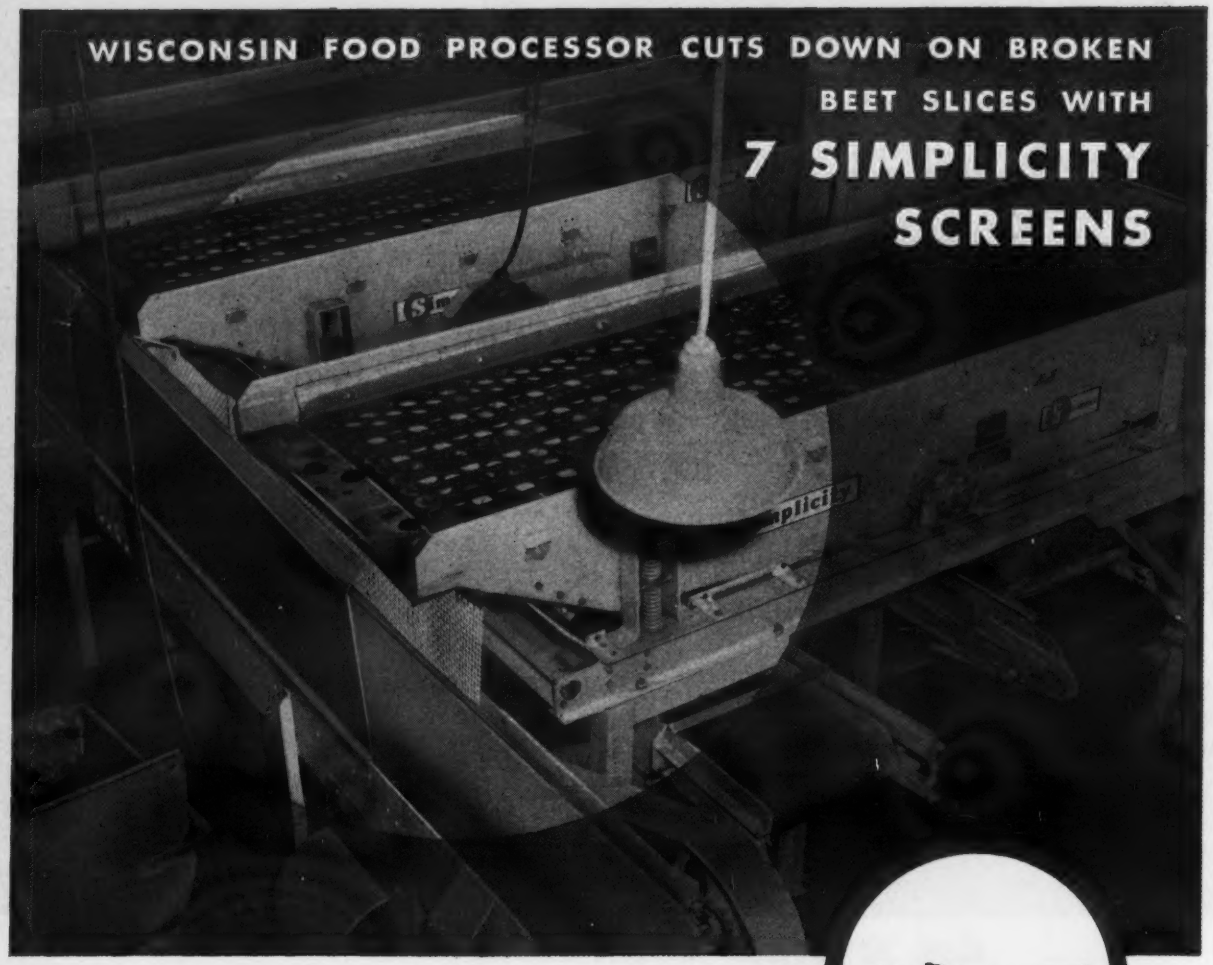
POSITION IN COMPANY_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

WISCONSIN FOOD PROCESSOR CUTS DOWN ON BROKEN BEET SLICES WITH 7 SIMPLICITY SCREENS



Broken beet slices, long a plague to food processors, have been largely overcome with Simplicity Food Screens. The gentle, shuffling action of this screen, as compared with the violent rotary action, insures that breakage will be kept to a minimum.

Pictured above are six Simplicity Model "C" 3′ x 8′ Single Deck Food Screens. These units are set up in tandem in batteries of three. A belt feeds the beet slices to the rear screen which has a stainless steel screen cloth section 6 feet long. The openings in this section are 1⅛″ sq. The remaining two feet of deck is stainless steel perforated plate, with 1⅝″ round, staggered openings. All slices larger than 1⅝″ feed over to the second screen which has two four foot deck sections. These sections are stainless steel, perforated plates. The rear section has 1¾″ round staggered openings—the front section has 2⅛″ round staggered openings.

All slices over 2⅛″ pass over, thus five distinct separations have been accomplished.

The seventh screen, also a Model "C" 3′ x 8′ single deck, is equipped with two four foot deck sections. The feed end is stainless steel screen cloth with ⅞″ sq. openings. Here the undesirable end cuts are scalped off. The remaining four feet of deck is stainless steel perforated plate with staggered openings, 1⅜″ round. Thus the unit has scalped off the broken slices and end cuts and separated two sizes.

These units will separate carrots in a like manner.

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND 6, MICHIGAN

SALES REPRESENTATIVES IN ALL PARTS OF THE U.S.A.
FOR CANADA: Simplicity Materials Handling Limited, Guelph, Ontario.
FOR EXPORT: Brown & Sites, 50 Church Street, New York 7, N. Y.

226

7346 on Reader Service Slip.

in that they "restricted competition."

In its decision, the I.C.C. approved:

Plan III service — in which the shipper provides the trailer, with the railroad supplying the flat car and the locomotive. Rate per flat car-mile — 50 cents.

Plan IV service — in which the shipper furnishes trailer and flat car, with the railroad supplying the locomotive. Rate per flat car-mile — 40 cents.

Expectations are that piggybacking now will increase considerably both because of the marked rate advantages that shippers can obtain by providing their own loaded equipment to the rails for trans-shipment to market, and because of speed and dependability of service.

Under Plans III and IV piggyback, freight can be handled coast-to-coast in a 3½-day period.

First comprehensive spec for plywood pallets

Entitled "Specifications for Douglas Fir and Western Softwood Plywood Pallets," new 12-page publication of National Wooden Pallet Manufacturers Association is meant specifically as aid to those responsible for the purchase of flat pallets and of pallet containers.

The Specifications cover such technical material as plywood types, grades, designs, styles and construction techniques, nomenclature and definitions; materials and species of lumber, permissible lumber characteristics, methods of fastenings and their applications, fabrication particulars, permissible nailing defects and dimensional tolerances.

They provide the user with a precise, comparative method of measuring quality in plywood pallets and pallet containers to meet the demands of any situation — including automation systems and mechanical material handling devices.

7347 on Reader Service Slip.

that's interesting

'Sha great idea!

A frozen Daiquiri mix that need only be mated with rum to produce an "instant cocktail" soon will be marketed by the processor — Sunshine Fruit Products, Los Angeles.

The new product — not a concentrate, and containing no artificial flavoring or preservative — supplies pure tropical lime juice and sugar in exact, fresh-frozen proportions.

Like tropical!

Damage from improper storage of frozen foods, points out Charles H. Brokaw, Minute Maid's chief of quality control, corresponds directly to how much above 0 F the temperature rises, and for how long. One day of storage at 25 F is equivalent to one yr at 0 F.

World citizen

Wine's international character begins right in the vineyards. California growers have the finest European grape varieties, and in Europe grapes are grown on American rootstocks.

Research-oriented, quality-conscious and profit-minded, Quality Carriers, Inc., Burlington, Wis., considers Macks an all-important part of both its liquid-foodstuff hauling fleet (shown here) and its petroleum and chemical transporting affiliate, Bulk Transport. Quality just recently opened its new Chicago terminal . . . and has inaugurated a new method of handling dry bulk commodities in pressure vessels unloaded by air.

Burlington, Wisconsin, carrier stresses

QUALITY in name..service..and equipment

In 1939 Lee Barney and Pat Torhorst were a couple of aggressive young men with a one-truck garage, lots of ambition and a dedication to give their customers the best job they knew how. Today, as QUALITY CARRIERS, INC., over 200 stainless steel tank trucks bearing the Quality name operate from a network of terminals to every corner of the U.S. east of the Rockies.

Lee Barney and Pat Torhorst have built Quality Carriers, Inc., into one of the finest liquid and dry bulk operations in the country. They did it through use of modern methods and equipment . . . and an insistence on living up to the name QUALITY in every phase of their far-flung operation.

Herman Pearce, Vice President and General Traffic Manager, puts it this way. "You don't try to cut corners on quality when your operation depends on the performance of your equipment. We've got 105 Mack Thermodyne® diesel tractors in our fleet, and we're adding more all the time. If a better truck ever comes along we'll buy it—but as of now, Macks are doing the job the way we want it done."

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Starred* items below have been more extensively reviewed elsewhere in the magazine. Key numbers in the last line will help to locate these reviews, which are numbered in sequence. Items followed by (†) indicate literature offered by advertisers — see Advertisers Index, page 123.

Processing Equipment, Accessories

Lists complete line of colloid mills and Dispersator Mixers*, 4 pp, (Lit) Premier Mill Corp.
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Aids in using wire cloth†, 120 pp. (Cat) The Cambridge Wire Cloth Co.
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Side-entering mixers, full range of sizes to 50 hp†, (Bul B-526) Mixing Equipment Co., Inc.
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Vacuum pumps, up to 20 microns†, (Bul) Lammert & Mann Co., Inc.
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Spray nozzles, wide range for multitude of jobs†, (Data Sheets) Spraying Systems
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Drum dryers, describes their many applications, laboratory service available†, (Dryers, Cat 384; Technical Service Laboratory, Cat 381) Blaw-Knox, Buflovak Equipment Div.
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Spray nozzles, designed for long wear, better performance†, (Cats SD1, SD2) Delavan Mfg. Co.
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Ingredients, Food Additives

Food emulsifiers and applications listed*, 12 pp, (Bul) Glyco Chemicals
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Gums and starches, their features and applications*, 4 pp, (Bul 101) Morningstar-Paisley, Inc.
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Applications for pectin that gells without sugar†, (Data sheets on pectin in low-calorie jams, aspics, desserts, fruit jells, sauces, relishes) Sunkist Growers
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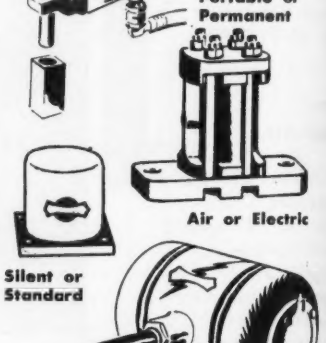

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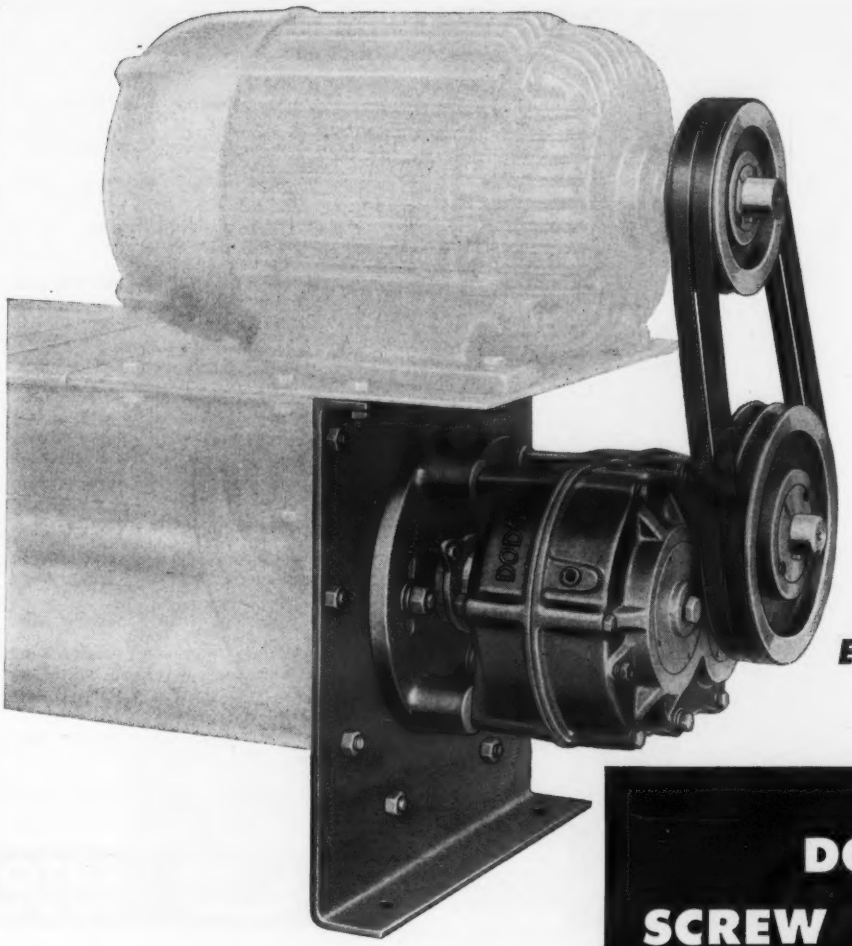

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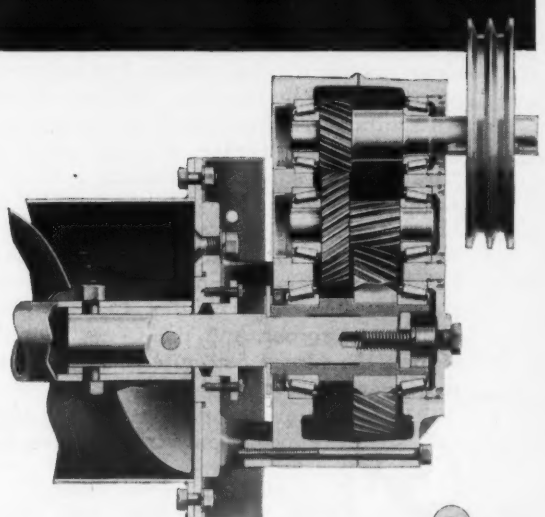

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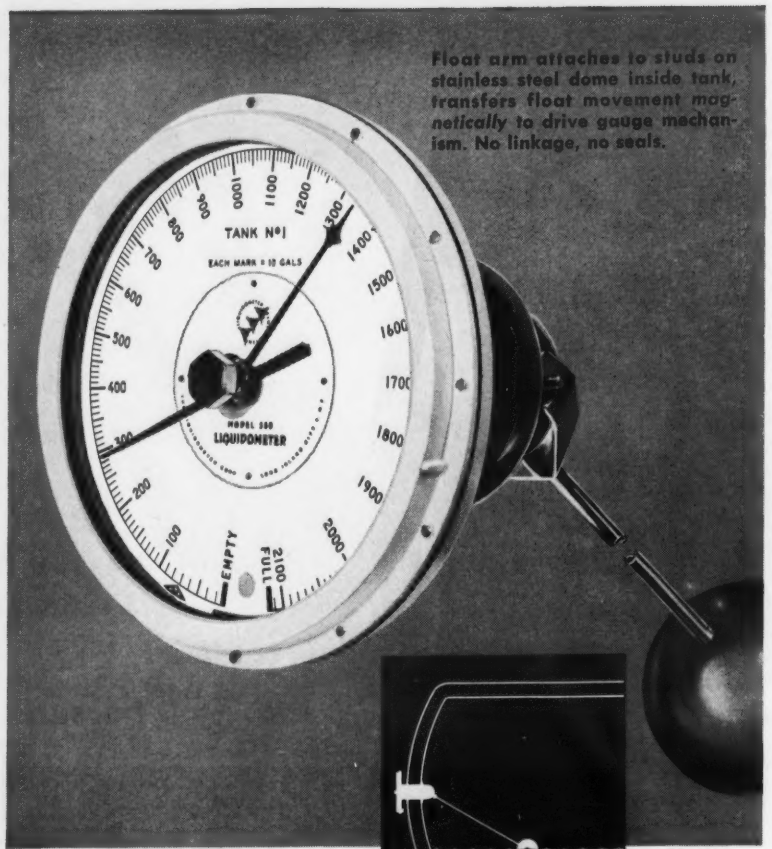
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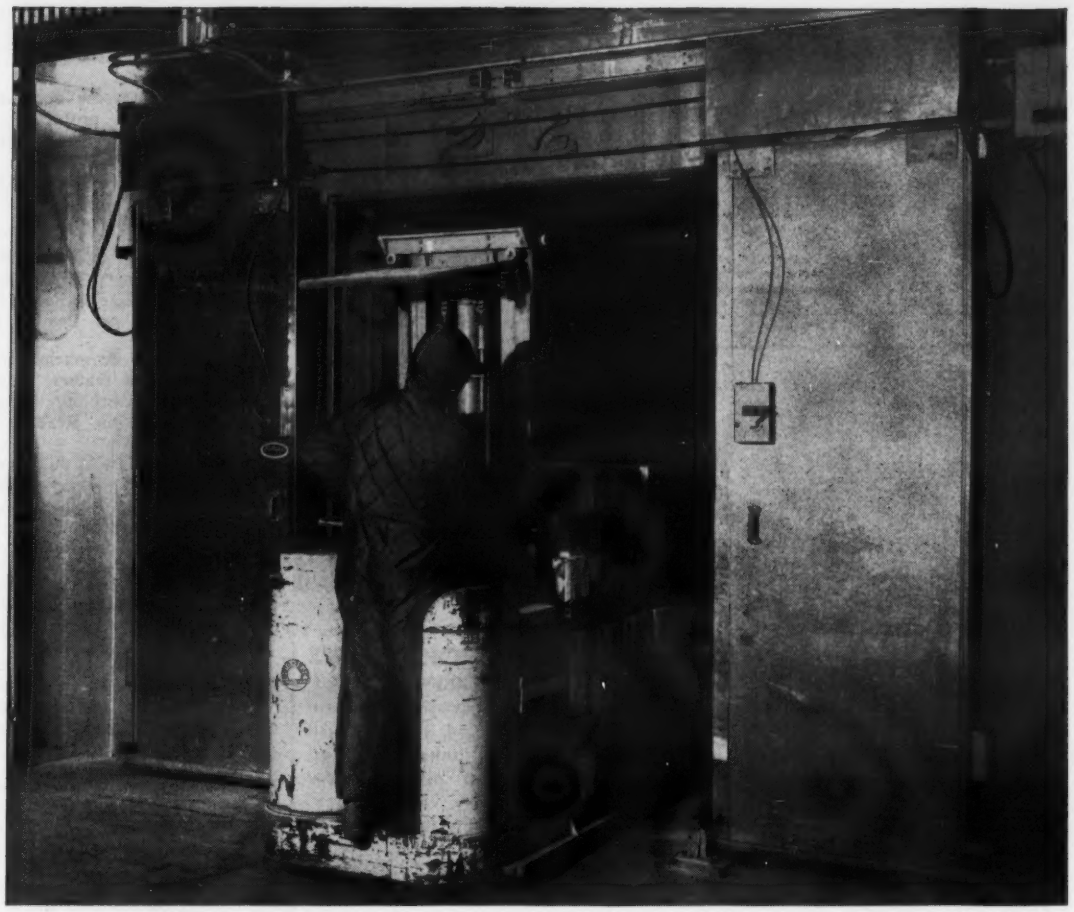

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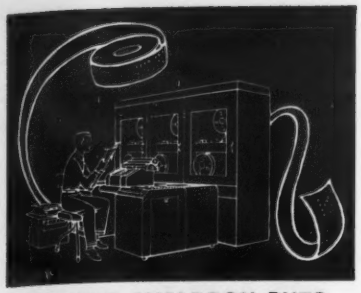

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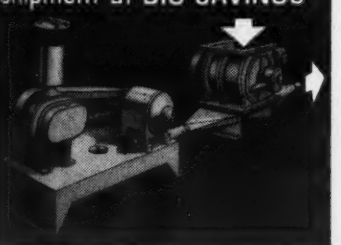

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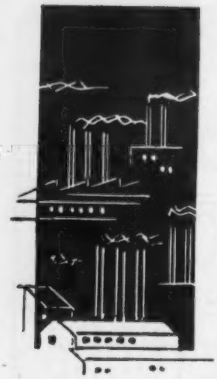

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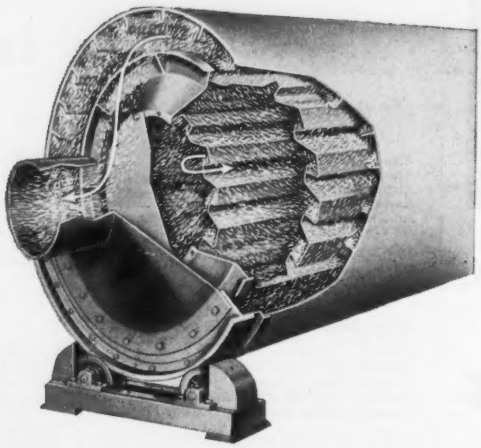

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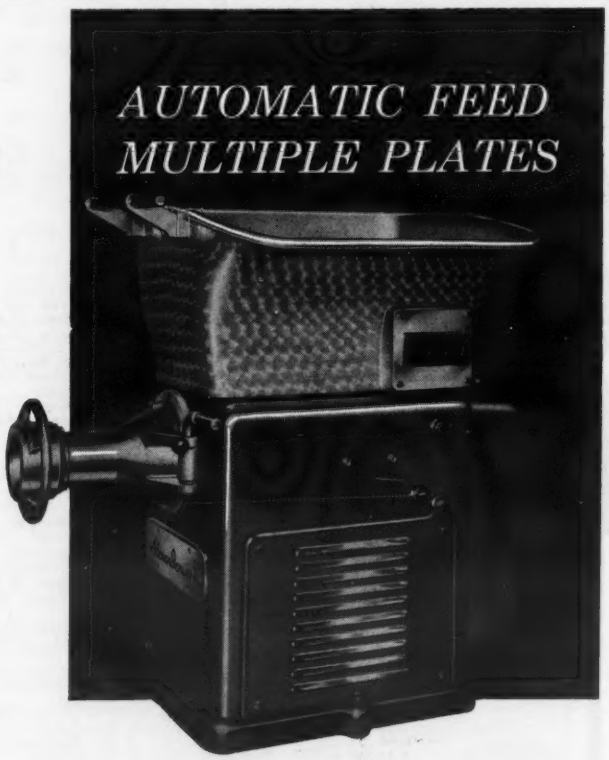

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that's interesting

Soon . . . Soybean Chateaubriand!

Meatless "meats" that look and taste like the real thing, are just as nutritious but cost far less may be the staple food of the future, say scientists at Archer-Daniels-Midland Co.

Although still in the research stage, such products as simulated beef steaks and roasts, hamburger, ham, bacon and turkey have been made in the laboratory from soybeans by the ADM scientists in cooperation with several food companies.

To produce the new foods, the researchers used a soybean derivative known as isolated protein — a tasteless, odorless powder that is almost pure protein. This substance can be processed into fibers resembling the structure and texture of meat, poultry, cheese, cereals. These foods can be given any desired color and flavor, and fat can be added as desired.

Inside enzymes

Next to hormones, enzymes are of major importance in making the world go 'round — agreed learned scientists at the recent IFT annual meeting. Yet, these essential substances are difficult to understand, maybe because, like Love, they simply are not so simple.

Electronically fated to be mated

Control of livestock breeding has become the latest addition to the growing list of assignments for electronic data processing. Stockholm Svensk Husdjursskotsel, the national Swedish cattle breeders association, will use an RCA 301 system for use in maintaining detailed breed-line records of dairy cattle throughout Sweden. Using these records, the system can select the most productive animals for breeding purposes.

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